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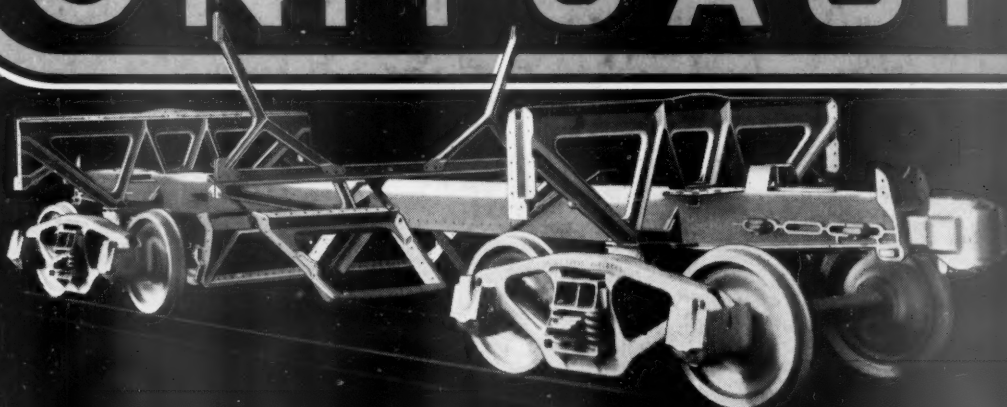
Railway Age

DAILY EDITION

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"Happy Days Are Here Again"

The Mechanical Division convention in Atlantic City in 1930 was the last prior to this year in connection with which there was held an exhibit of the Railway Supply Manufacturers' Association. Of course, the exhibit was discontinued because of the depression. Although railway earnings were rapidly declining, the business of the railway manufacturing industry was still pretty good in 1930 because the railways, in compliance with the request of President Hoover, were trying to maintain their capital expenditures. The railways during the subsequent seven years have suffered terribly from decline of business; but they "don't know nothin'" about decline of business as compared with the equipment and supply manufacturers.

Total railway purchases from the manufacturers in 1929 were \$1,428,000,000. They declined in 1930 to \$876,000,000; in 1931 to \$488,000,000, and in 1932 and 1933 to about \$270,000,000—80 per cent less than

in 1929. Always it has been a feast or a famine with the railway manufacturing industry. Railway purchases of equipment and materials sharply increased in 1934, stimulated by government loans; declined in 1935; and then increased in 1936 to over \$760,000,000. They have increased again in 1937 and it looks as if they will amount this year to about a billion dollars. The largest increase has been in the buying of equipment, its accessories and facilities for maintaining it. Hence the convention and this great exhibit at Atlantic City, and the smiling faces of the railway manufacturing fraternity.

"How long will it last?" many ask. The gift of prophecy has been vouchsafed to this paper in only limited degree, but there is one prediction that experience shows can be made with complete confidence. This is, that railway buying on a large scale will continue as long as railway net operating income continues to increase and, after increasing, is maintained on a level commensurate with the needs of the railway industry, which are vast, and for years will be.

The recent decline in orders for equipment means only that the manufacturers have on their books all the orders they can fill before the annual peak of freight business is reached next fall. If traffic and railway net operating income continue to increase there will be plenty of business for some years for manufacturers who intelligently go after their share of it. The depression that began in 1929 is definitely over, and the only way to stop business now is for the New Deal, the Old Deal, or some other Deal to start another depression.

"Happy days are here again" for the railway manufacturing industry, as is made plain by the deafening hammering on the exhibits all around us as this contribution to cheerfulness is being written. Bill Thompson, ex-mayor of Chicago, had as a slogan, "Throw away your hammer and get a horn." The hammering in the convention hall at Atlantic City on June 15 is the most musical noise that this journal of civilization has heard for seven years.

Gigantic Showcase

The public loves a show, and for the past three years the railways have been giving them just that. Among those who rode the original Zephyr on its epoch-making, non-stop flight from Denver to Chicago, over three years ago, were many who could not help but have their doubts as to the future of railroading. The usually lonely mesas, now black with people waiting to see the train go by in a Colorado dawn, was the first encouragement those of faint heart had perceived in many moons. Later that day, the almost solid walls of people through which the train made its triumphant progress, left all Doubting Thomases without ammunition for their pessimistic wails. The railways had come back. Of course, except for lack of showmanship, they hadn't

been anywhere to come back from, but the public thought they had. In the years since then, the railways have proved that showmanship pays, for no conceivable amount of returning prosperity would have produced the full passenger trains of today without showmanship.

The Atlantic City exhibit is a great show, and the action of the R.S.M.A. in throwing it open to the public next Saturday and Sunday is a move in the right direction. The A.A.R. is publicizing the show widely and anyone can get in on the days mentioned who shows the return half of a round-trip railroad ticket. Already, the exhibit has attracted much attention. The roomette car came in on a regular train Monday and not one single passenger on the crowded train passed it without examining it and making favorable comment. Meanwhile, there was not a train that went in or out of Atlantic City without every passenger's neck being craned to get a good view of the ultra-modern cars and locomotives parked just outside the station.

The public loves a show, and there is no industry that can provide such pulse-stirring pageantry as a display of new railway equipment—immaculate, beautiful cars with conveniences most homes will never attain, powerful locomotives straining at the leash, and all the devices that make them "tick."

The Beginning Of a New Era

It is doubtful if anyone who attended the conventions and exhibit held at Atlantic City in June, 1930, believed at that time that a period of seven years would elapse before another large convention with exhibit would be held, and that during a part of that period the work of the A.A.R. divisions would be largely

suspended. During that seven years many changes have taken place—changes in personnel, changes in outlook, changes in equipment, changes in methods. In 1930 the outlook of railway officers was predicated to a certain extent on the premise that railway transportation was essentially monopolistic in character. Moreover, at that time no one anticipated the drastic curtailments which would have to be made—some in the interests of economy, some not in the interests of ultimate economy but none-the-less necessary.

In 1930 a number of developments which are resulting in revolutionary changes in railway equipment were just starting and others were unknown even though not entirely unanticipated. Air conditioning made its bow in the diner "Martha Washington" at the 1930 exhibit. The possibilities of roller bearings for driving-wheel journal boxes were dramatized by Timken locomotive No. 1111. The actual realization of roller bearings on crank pins was then still in the somewhat indefinite future. The need for lighter cars was being realized in 1930, but the use of only one of the materials (aluminum alloys) by which reduced weight might be accomplished within the limits of economic possibility had been demonstrated. The others all came later. The problems of high passenger-train speeds which are now the subject of discussion wherever railway men meet, if then in the minds of railway men at all, were matters of speculation, not of grim reality.

Aside from the memories and personal associations which have bridged the gap of seven years, the conventions and exhibit of 1937 are in a different world from the conventions and exhibit of 1930. While new eras can scarcely be said to begin at a certain moment, in terms of convention history the 1937 conventions and exhibit surely mark the beginning of a new era in railway transportation.

The Programs for Today

The Mechanical Division of the Association of American Railroads will be the only convention which will hold a meeting today. The meeting room is at the right hand of the stage (Room B) in the main exhibit hall of the Auditorium.

Mechanical Division

The seventeenth annual meeting of the Mechanical Division will be called to order at 9:30 a.m., daylight saving time. The session is scheduled to adjourn at 12:30 p.m. The program follows:

9.30 A. M.—Meeting Called to Order.

Welcome: Hon. Charles D. White, Mayor of Atlantic City.

Address by J. M. Symes, Vice-President, Operations and Maintenance Department, Association of American Railroads.

Address by Chairman J. W. Burnett, General Superintendent

Motive Power and Machinery, Union Pacific Railroad.
Action on Minutes of Annual Meeting of 1936.
Appointment of Committees on Subjects, Resolutions, Correspondence, etc.
Unfinished Business.
New Business.
Report of General Committee.
Report of Nominating Committee.
Discussion of Report on Lubrication of Locomotives.

Entertainment

10.30 A. M.—Organ Recital, Ball Room. William H. Jackson, Feature Pipe Organist.
3.30 P. M.—Organ Recital, Ball Room. William H. Jackson, Feature Pipe Organist.
9.00 P. M.—Informal Dance, Ball Room. Johnny Johnson (At the Piano) and His Orchestra. Special Entertainment, Nevco Amusement Enterprises, Inc.

Greetings from the R. S. M. A.

To the "Gathering of the Clan" after seven long years — Tremendous possibilities involved in proper appreciation of exhibit.

By S. G. Down, President

TO all delegates of the Association of American Railroads attending their annual meetings in Atlantic City I extend a hearty greeting, and welcome them to the exposition provided by the railway supply fraternity in the great auditorium, and at the railway station.

The convention this year is of unusual significance. Being the first of its kind in seven years, it gives promise of becoming a real "gathering of the clan". Old friendships will be renewed, new acquaintances made, serious business discussed. Ideas will be exchanged, activities compared, problems propounded, results disclosed—to the end that all may benefit from the experiences of each.

But that is not all. There will be something more substantial than conversation, valuable as that may be. Tangible evidence of progress will also be available. During the last few years members of the several divisions of the A.A.R. have foregathered regularly to hear what progress is being made in their several fields of activity. But this year they will *see* what new materials, new methods, new devices, new equipment have been bringing about a "renaissance" in our railroads.

Out of the Night of Depression

Although many have become more or less familiar with the extensive progress made during the last few years, here is an opportunity to observe the results of this development in a collective exhibit. Manufacturers of railway apparatus have collaborated in a comprehensive showing of their modernized products—ranging from minute details to complete transportation units.

It has been quite generally considered that every seven years a complete physical change takes place in the human organism, and in transportation systems as well. More correctly perhaps, may it be said that gradual transformations are continuously taking place, but the full import of these only become evident at more or less definite periods in life. The improved transportation facilities that are now attracting widespread interest have not come into being suddenly, in a day, nor over night. Yet in a sense they have developed during the "night"—the night of depression. Not because of it, but in spite of it.

Bringing the Mountain to Mohammed

Throughout the long period when business was at a very low ebb, and production manufacture necessarily curtailed by lack of demand, there was no cessation in the experimental activities of railway supply companies. They continued research and development work on even a more intensive and extensive scale. The tangible evidence and practical results of this forward-looking attitude and endeavor are now being felt in a very definite way. The railway industry is no longer dormant; it is very much awake, pulsating with new life and vigor.

Hundreds of improvements have been made in materials, in appliances, in equipment, in facilities. Transportation units are being created anew from headlight to tail sign, from rails to roof. But railway supply manufacturers have been handicapped by economic conditions in showing the nature, and demonstrating the value of their new products as widely and as actively as they desired. Much has been accomplished by visits of railway executives to manufacturing plants, but the scope of appraisal by this method has its well recognized limits. Since Mohammed cannot come to the mountain, we bring the mountain to Mohammed, and convert the great auditorium at Atlantic City into a mammoth display counter for the benefit of all those who authorize or specify railroad products.

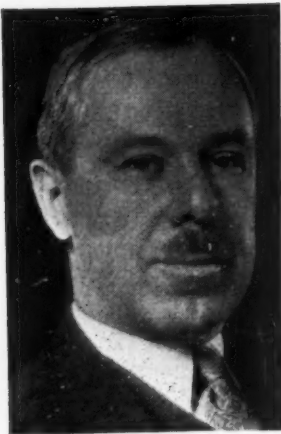
Undoubtedly, due to changes in the supervisory personnel on the railroads, many men now in positions of greater responsibility have never had the opportunity of attending conventions and viewing extensive exhibits. This exposition should be of especial value to such men. It will permit them to become familiar with the latest improvements in equipment and facilities, through the many operative exhibits. We cannot conceive of any other method whereby such comprehensive information could be obtained and its practical value more adequately demonstrated.

Cultivating the Public

Although these exhibits are intended primarily for the enlightenment of railroad men, their educational value to present and potential patrons of the railways has not been overlooked. During recent years there has been a consistent and widespread effort to make the general public more conscious of the advantages of modernized railway transportation. As our contribution to this objective we are opening the exposition hall to railway patrons on Saturday and Sunday. This innovation is being given extensive publicity by the railroads themselves.

In the midst of strenuous and serious convention activities there needs to be some diversion; sources of inspiration as well as of information should characterize such gatherings. Although the very acquisition of new knowledge for practical purposes is of itself stimulating to a man's spirit, nevertheless some may desire a little diversion. And so, to provide relaxation following attendance at the formal meetings and study of technical details of the exhibits, our entertainment committee has arranged a number of activities so that delegates and their families may rub shoulders in a social way. We hope that these will play their intended part in making your sojourn in Atlantic City very pleasant as well as profitable.

In just a few days the 1937 Convention will have become an event of the past, a matter of history, but I trust it will be long remembered as an occasion of paramount interest and significance.



W. E. Wine

Supply Manufacturers Again M

After lapse of seven years, exposition establishes high record for educational value of exhibits



N. C. Naylor

UP to the time of the World War it was the custom to hold exhibits under the direction of the Railway Supply Manufacturers' Association at the annual meetings of the railway mechanical associations, known in those days as the American Railway Master Mechanics' Association and the Master Car Builders' Association. World War conditions interfered with these annual conventions and they were replaced by meetings of the General Committees, or small groups, the exhibits being done away with entirely.

After the War, in 1919, the newly organized Mechanical Division of the American Railway Association resumed the conventions formerly held by the M. M. and M. C. B. Associations with the accompanying exhibits. Economic conditions interfered with this plan in 1921. From 1922 to 1930 the large conventions, with exhibits, were held biennially, the Railway Purchases and Stores Division holding its meeting during three days of the convention period.

Long Time Between Exhibits

The longer interval between the exhibits complicated matters somewhat and made it more difficult to stage the exposition. Meanwhile, however, the exhibit continued to grow larger and larger each year. The facilities of Young's Million Dollar Pier were soon outgrown, the machine tool exhibit being forced to the other side of the Boardwalk. The opening of the Municipal Auditorium in 1930 brought relief. Unfortunately, economic conditions have conspired to prevent holding exhibits since then until this year.

It has been customary for the Railway Supply Manufacturers' Association to elect new officers after each exposition. The term of one year was therefore extended to two years, beginning in 1920 but since no exhibit has been held since 1930, the present officers have held over during that time. Permanent headquarters have been maintained in the Oliver Building at Pittsburgh, however, and the officers have been ready at any time during the seven years to rally the railway supply interests and put on an exhibit, if and when conditions proved favorable.

During most of the years in this intervening period there has been little question as to whether or not an exhibit should be held, although it has been necessary for the officers of the association to study developments closely and to attempt to forecast conditions, in order to know when to resume activities. Long months



J. D. Conway.
Secretary-Treasurer



Webb G. Krauser

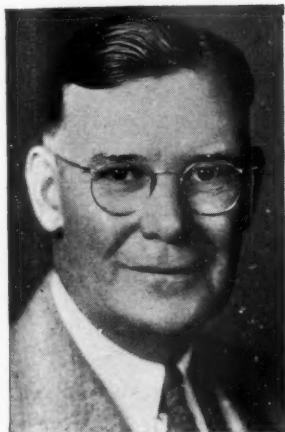


C. W. Floyd Coffin



Charles J. Nieman

Make Good In A Big Way



V. W. Ellet



Geo. L. Gordon



Walter C. Sanders



S. G. Down, President

of planning and preparation are required to put on an exhibit, and the problem for those in charge has been to make an accurate forecast and in conjunction with the railway officers, to decide when the time was ripe to go ahead.

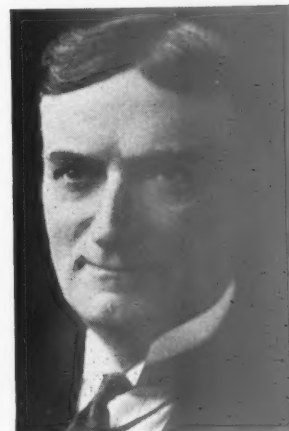
The Railway Supply Manufacturers' Association has been fortunate in having as its president during these seven years, S. G. Down. In a quiet, even-tempered way he has been continually on the alert to sense changing conditions. He, with his associates on the executive committee of the R.S.M.A., has had to maintain an intimate contact at all times with the leaders of both the railway and railway supply interests, in order not only to determine upon the right time for a big exposition, but to know how to plan and put it over, in order to make the most effective contribution to the railroad welfare and at the same time fully protect the interests of the railway supply manufacturers.

Awaiting an Opportunity

During the depression the railway supply manufacturers have been busily engaged in research and development work and naturally an early opportunity was desired of presenting the resulting improvements in a more or less spectacular and dramatic way, in order to bring them forcefully to the attention of the railway field at large. There have been many changes made in railroad personnel and new officers, supervisors and foremen have had to take over larger responsibilities. Many of these men have never had an opportunity of attending a railway supply exposition and of contacting



F. E. Dodson



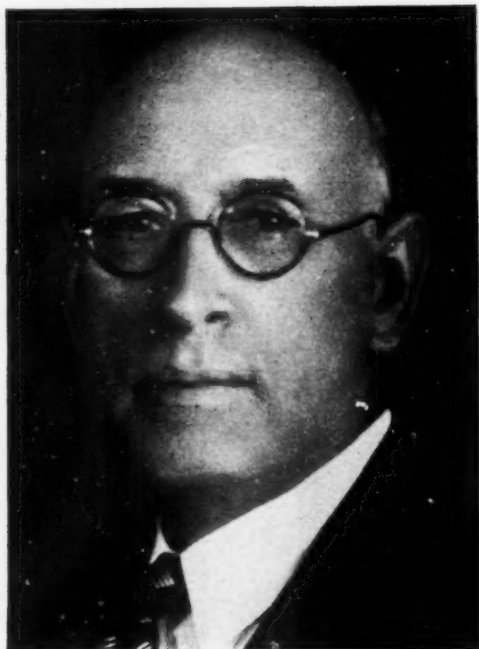
J. W. Fogg



F. J. O'Brien



F. H. Smith



D. L. Eubank, Vice-President

with their associates on other railroads, or with the experts in the railway supply field. Railroad officers, when business conditions began to pick up, recognized the advisability of an educational stimulant in the nature of a big convention, accompanied by an extensive exposition of new devices and equipment, and the railway supply group was at the same time keen to take advantage of such an opportunity.

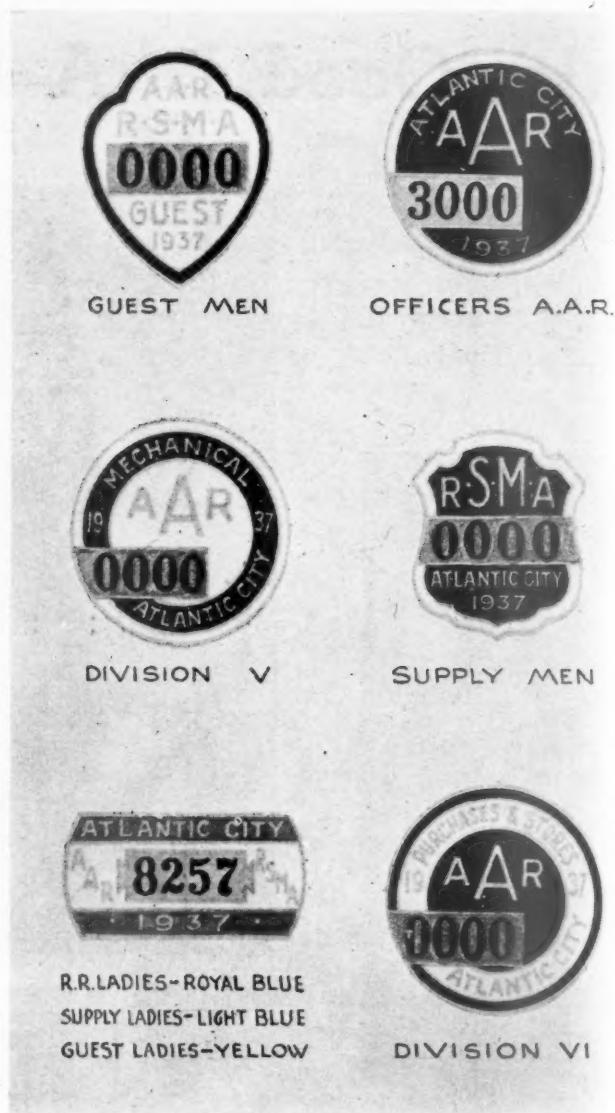
The decision to hold the meetings and exhibit at Atlantic City this year, made many months ago, has fortunately been more than amply justified. The facts about the exhibit, which are presented in another article, indicate its comprehensiveness and the success which has been achieved in making it a real exposition of progress and achievement in the field of railroad mechanical department facilities and equipment, as well as in specialties of interest to the purchases and stores' officers.

The purpose of this article is to outline briefly the organization and workings of the Railway Supply Manufacturers' Association, which has charge not only of the exhibit but of entertainment and other non-technical activities in connection with the joint conventions. In addition to the exhibits, for instance, it assumes the responsibility for entertainment and recreation features, for the registration and enrollment, including the publication of registration books; it also supervises the operation of the rolling chairs for the use of convention delegates.

Officers and Executive Committee

The immediate direction of the Railway Supply Manufacturers' Association is entrusted to its officers and executive committee. This executive committee includes the president of the association, a vice-president and thirteen members, who are selected from eight geographical districts. A secretary-treasurer is appointed, who is also in charge of the headquarters at Pittsburgh.

The president of the association is Sidney G. Down, vice-president of the Westinghouse Air Brake Com-



1937 Badges

pany. The vice-president is Daniel L. Eubank, Atlanta, Ga., and the secretary-treasurer, John D. Conway, Pittsburgh, Pa.

The members of the executive committee and the districts which they represent, are as follows:

First district (New England states) one member: Victor W. Ellet, Hunt-Spiller Manufacturing Corporation, South Boston, Mass.

Second district (New York and New Jersey) three members: Franklin H. Smith, Gold Car Heating & Lighting Company, Brooklyn, N. Y.; J. E. Brown, Magnus Metal Corporation, New York (appointed to serve in the place of R. J. Himmelright, deceased, whose term would expire this year); and C. W. Floyd Coffin, Franklin Railway Supply Company, Inc., New York.

Third district (Pennsylvania) two members: C. J. Nieman, Penn Iron & Steel Company, Creighton, Pa.; and George L. Gordon, Lukens Steel Company, Coatesville, Pa.

Fourth district (Ohio, Indiana and Michigan) two members: Walter C. Sanders, The Timken Roller Bearing Company, Canton, Ohio; and W. E. Wine, The Wine Railway Appliance Company, Toledo, Ohio.

Fifth district (Illinois) two members: N. C. Naylor,

American Locomotive Company, Chicago; and J. W. Fogg, MacLean-Fogg Lock Nut Company, Chicago.

Sixth district (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Georgia, Florida, Alabama, Mississippi, Kentucky and Tennessee) one member: F. E. Dodson, United States Rubber Products, Inc., Baltimore, Md.

Seventh district (states west of the Mississippi river) one member: F. J. O'Brien, Globe Steel Tubes Company, Milwaukee, Wis.

Eighth district (Canada) one member: Webb G. Krauser, Canadian Cardwell Company, Ltd., Montreal, Canada (appointed to serve in the place of H. T. Armstrong, deceased).

Members to Be Elected

In addition to electing a president and vice-president at the annual meeting of the association this week, it will be necessary to elect successors to the following members of the Executive Committee: Victor W. Ellet, first district; J. E. Brown, second district, who was appointed to take the place of R. J. Himmelright, deceased; W. E. Wine, fourth district; N. C. Naylor, fifth district; and Webb G. Krauser, eighth district, who was appointed to serve in place of H. T. Armstrong, deceased, until a successor could be elected to serve the remaining year of the term.

The work of the R.S.M.A. is divided among a number of committees, the duties and personnel of which are as follows:

Exhibit Committee

The committee in charge of the exhibits has as its chairman N. C. Naylor of the American Locomotive Company, Chicago. Associated with him are four other members of the Executive Committee, C. W. Floyd Coffin, George L. Gordon, Webb G. Krauser and W. E. Wine. Vice-President Eubank has also assisted the committee by taking over the responsibility for the track exhibits. The most difficult tasks of the committee obviously are the allocation of space in the exhibit hall and the responsibility for getting the exhibits in place at the

appointed time. The success with which it has accomplished its objectives is indicated by the story on the exhibits, elsewhere in this number, and will be particularly appreciated as the members visit and study the various displays.

The track exhibit, always of special interest, is unusually extensive and complete this year. It is unfortunate that this space is not immediately adjacent to the Auditorium. It is, however, located at the new Union Terminal Station of the Pennsylvania-Reading Seashore Lines, only about two blocks from the Auditorium.

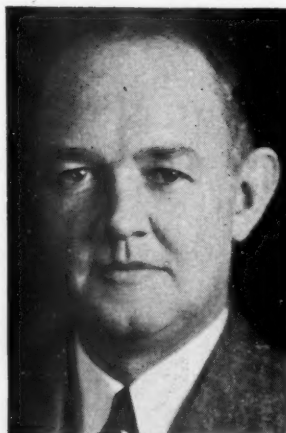
Entertainment Committee

The Entertainment Committee has charge of all entertainment and recreation features; included among these are the organ recitals in the ballroom during the daytime and special features during the evenings. The committee is headed by J. E. Brown, chairman, Magnus Metal Corporation, New York, who has associated with him two vice-chairmen—T. W. Delanty, Ajax Hand Brake Company, Chicago; and H. E. Graham, Jones & Laughlin Steel Corporation, Pittsburgh, Pa. The other members of the committee are:

J. H. Ainsworth, Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
H. M. Arrick, Armco Railroad Sales Co., Middletown, Ohio.
Jack Amos, The Pyle National Co., Chicago, Ill.
T. M. Armstrong, The International Nickel Co., Inc., New York, N. Y.
W. T. Ashe, Klasing Hand Brake Co., Chicago, Ill.
Kenneth Auburn, American Locomotive Co., New York, N. Y.
H. G. Barbee, Chicago Pneumatic Tool Co., New York, N. Y.
F. D. Barber, Standard Car Truck Co., Chicago, Ill.
T. Huston Bateman, W. H. S. Bateman & Co., Philadelphia, Pa.
W. H. S. Bateman, W. H. S. Bateman & Co., Philadelphia, Pa.
W. L. Bayer, Canadian Bronze Co., Ltd., Montreal, Canada.
J. D. Brandon, American Arch Company, Inc., Chicago, Ill.
Robert Brown, American Locomotive Company, New York, N. Y.
Pard Browne, The Superheater Company, New York, N. Y.
S. S. Bruce, Koppers Company, Pittsburgh, Pa.
C. E. Bryant, Jr., Johns-Manville Company, New York, N. Y.
Muscoe Burnett, Jr., The Oxweld Railroad Service Co., Chicago, Ill.
Charles R. Busch, Buffalo Brake Beam Company, New York, N. Y.
J. L. Canby, Electric Service Supplies Co., Philadelphia, Pa.
L. A. Carpenter, Tousey Varnish Company, Chicago, Illinois.
R. A. Carr, Dearborn Chemical Co., Chicago, Ill.
Ray Chambers, The Garlock Packing Company, Chicago, Ill.
J. O. Cheslev, Aluminum Company of America, Pittsburgh, Pa.
Geo. B. Christian, The Wine Railway Appliance Co., Toledo, Ohio.
P. J. Christy, Chicago Pneumatic Tool Co., Philadelphia, Pa.
R. G. Clasen, Micro Corporation, Davenport, Iowa.
J. W. Coleman, Consolidated Equipment Co., Montreal, Canada.
J. V. Conway, Heywood-Wakefield Company, Chicago, Ill.
W. G. Cook, The Lunkenheimer Co., Chicago, Ill.
R. A. Corley, The Corley Co., Jersey City, N. J.
W. E. Corrigan, American Locomotive Co., Railway Steel-Spring Division, New York, N. Y.
W. H. Croft, Magnus Metal Corporation, Chicago, Ill.
W. H. Croft, Jr., Magnus Metal Corporation, New York, N. Y.
E. C. Daniels, West Disinfecting Co., Chicago, Ill.
Frederick C. Davern, Standard Oil Company of New Jersey, New York, N. Y.
H. R. Deubell, Chicago Pneumatic Tool Co., Chicago, Ill.
H. W. Dillon, Paxton-Mitchell Co., New York, N. Y.
J. H. Dougherty, Canada Iron Foundries Limited, Montreal, Canada.
H. J. Downes, American Locomotive Co., New York, N. Y.
J. M. Driscoll, Air Reduction Sales Company, Cleveland, Ohio.
L. F. Duffy, Camel Sales Co., Chicago, Ill.
F. C. Dunham, Chicago-Hutchins Corporation, New York, N. Y.



J. E. Brown



Thomas W. Delanty



H. E. Graham

Chairman and Vice-Chairmen of Entertainment Committee



S. C. Dinsmore, Chairman
Transportation Committee



C. S. Clingman



Carroll Jarden
Vice-Chairmen, Transportation Committee

H. I. Dunphy, American Car & Foundry Co., New York, N. Y.
Wilber Eckels, Cardwell Westinghouse Company, Chicago, Ill.
K. V. Eisele, Canadian Steel-Tire & Wheel Co., Ltd., Montreal, Canada
J. W. Fogg, MacLean-Fogg Lock Nut Co., Chicago, Ill.
F. J. Foley, American Locomotive Company, New York, N. Y.
R. E. Frame, Standard Car Truck Co., Chicago, Ill.
R. I. Fretz, Reading Iron Company, Philadelphia, Pa.
C. L. Galloway, Hunt-Spiller Manufacturing Corp., Boston, Mass.
C. H. Gayetty, The Corley Co., Jersey City, N. J.
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Arthur S. Goble, The Baldwin Locomotive Works, Philadelphia, Pa.
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R. R. Lally, Globe Steel Tubes Co., New York, N. Y.
W. T. Lane, Franklin Railway Supply Co., Inc., Chicago, Ill.
Edward Laterman, The Champion Rivet Company, New York, N. Y.
E. H. Leisch, The Adams & Westlake Co., Chicago, Ill.



H. L. Burrhus, Chairman
Enrollment Committee



M. K. Tate



B. T. Moffatt



Joan L. Bacon

Vice-Chairmen of Enrollment Committee

Henry J. Linn, Henry J. Linn Company, Boston, Mass.
 J. A. MacLean, Jr., MacLean-Fogg Lock Nut Co., Chicago, Ill.
 D. T. Main, Adanac Supplies Limited, Montreal, Canada
 N. N. Marshman, George O. Jenkins Co., Bridgewater, Mass.
 W. C. Masters, Flannery Bolt Co., Bridgeville, Pa.
 Herbert Maus, National Malleable and Steel Castings Co., Cleveland, Ohio
 J. A. McCormick, General Steel Castings Corp., Eddystone, Pa.
 A. J. McDonald, Lebanon Steel Foundry, Philadelphia, Pa.
 J. P. McKinley, Badeker Manufacturing Co., Chicago, Ill.
 A. L. McNeill, The Okonite Co., Chicago, Ill.
 C. G. Melvin, The White Company, New York, N. Y.
 A. S. Merz, Union Metal Products Co., Chicago, Ill.
 William S. Morris, American Locomotive Co., Chicago, Ill.
 J. P. Moses, Joseph T. Ryerson & Son, Inc., Chicago, Ill.
 C. A. Murphy, Westinghouse Electric & Mfg. Co., Boston, Mass.
 C. E. Murphy, Wilson Engineering Corporation, Cleveland, Ohio
 John H. Murrian, The W. S. Murrian Co., Knoxville, Tenn.
 G. A. Nicol, Jr., Geo. A. Nicol Corporation, New York, N. Y.
 A. B. Nilsen, The Bettendorf Co., New York, N. Y.
 J. L. Noon, The Glidden Co., Cleveland, Ohio
 Brownrigg L. Norton, Scullin Steel Co., New York, N. Y.
 C. A. Odell, The Superheater Company, New York, N. Y.
 Thomas O'Leary, Jr., Johns-Manville Sales Corp., Chicago, Ill.
 R. R. Paradies, Beckwith-Childers Co., Newark, N. J.
 H. E. Passmore, The Frost Railway Supply Co., Pittsburgh, Pa.
 L. S. Peabody, American Locomotive Company, Railway Steel-Spring Division, New York, N. Y.
 R. T. Peabody, Air Reduction Sales Company, New York, N. Y.
 S. L. Poorman, Westinghouse Air Brake Co., New York, N. Y.
 H. E. Ray, Central Railway Supply Co., Chicago, Ill.
 Lewis B. Rhodes, Vapor Car Heating Co., Washington, D. C.
 J. H. Rodger, The Oxweld Railroad Service Co., Chicago, Ill.
 W. Searls Rose, W. L. Brubaker & Bros. Co., New York, N. Y.
 F. H. Schell, Black & Decker Mfg. Co., Towson, Maryland
 John Schlitz, The Sherwin-Williams Co., New York, N. Y.
 A. Sellers, Jr., William Sellers & Co., Inc., Philadelphia, Pa.
 Louis M. Shine, Standard Varnish Works, New York, N. Y.
 W. H. Smaw, Electric Service & Supplies Co., Atlanta, Georgia
 E. Payson Smith, Jr., Illinois Railway Equipment Co., Chicago, Ill.
 J. C. Snyder, Pullman-Standard Car Mfg. Co., Cleveland, Ohio
 R. G. Sonquist, American Steel Foundries, New York, N. Y.
 O. W. Spencer, Southern Wheel Division of the American Brake Shoe and Foundry Company, St. Louis, Mo.
 Philip Tarrisi, Chicago Pneumatic Tool Company, New York, N. Y.
 K. I. Tobin, Camel Sales Co., Chicago, Ill.
 J. D. Tully, Bethlehem Steel Company, New York, N. Y.
 J. H. Van Moss, American Car & Foundry Co., New York, N. Y.
 F. W. Venton, Crane Co., Chicago, Ill.
 W. M. Vinnedge, Worthington Pump & Machinery Corp., Harrison, N. J.
 W. R. Walsh, Ewald Iron Company, Chicago, Ill.
 E. H. Weaver, Westinghouse Air Brake Co., Cleveland, Ohio
 J. Frederic Wiese, Lukens Steel Company, Coatesville, Pa.
 J. W. Wiley, Hyatt Bearings Division General Motors Corporation, Harrison, N. J.
 R. Arthur Williams, American Car & Foundry Co., Cleveland, Ohio
 C. S. Wright, The Oxweld Railroad Service Co., Atlanta, Georgia
 John B. Wright, Westinghouse Air Brake Co., Pittsburgh, Pa.
 T. C. Wurts, Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

Enrollment Committee

It is the responsibility of the enrollment committee to see that the members of the various associations and their guests are welcomed to the exhibit hall and that they are properly registered. Because of the different classifications in which the convention attendants are divided, this is no easy task, particularly since accurate and complete registration lists or booklets must be published at intervals throughout the conventions.

The chairman of the Enrollment Committee is H. L. Burrhus, Johnson Manufacturing Company, New York. He is assisted by three vice-chairmen, each one of whom is in charge of a group of committeemen. These subdivisions of the committee must work in relays, in order to cover the long hours and ease the burden upon the individual members. An effort has also been made to include in the committee representative members from various parts of the country, who will be acquainted with the visiting railroad officials from their sections and can see that they are properly greeted and their needs attended to. The vice-chairmen are M. K. Tate, Lima Locomotive Works, Inc., Lima, Ohio; John L. Bacon, Valve Pilot Corporation, New York; and B. T. Moffatt, The B. F. Goodrich Company, New York. The personnel of the committee includes:

Paul B. Austin, Johns-Manville Sales Corporation, Chicago, Ill.
 G. M. Buchanan, The Black & Decker Manufacturing Company, Towson, Maryland
 J. E. Buckingham, The Lincoln Electric Railway Sales Company, Chicago, Illinois
 Roland W. Burt, Joseph T. Ryerson & Son, Inc., Jersey City, N. J.
 George A. Cardwell, Lukens Steel Company, Coatesville, Pa.
 Walker H. Evans, Standard Steel Works Company, Philadelphia, Pa.
 Frederick J. Fischer, Simmons-Boardman Publishing Corporation, New York, N. Y.
 Francis H. Hartley, Jr., National Lead Company, New York, N. Y.
 C. O. Hedner, The Yale and Towne Manufacturing Company, Philadelphia, Pa.

J. F. Hoerner, The Baldwin Locomotive Works, New York, N. Y.
 F. L. Johnson, Pressed Steel Car Company, Inc., Chicago, Ill.
 John D. Johnson, Johns-Manville Sales Corp., Cleveland, Ohio
 H. V. McKedy, The Patterson-Sargent Company, New York, N. Y.
 John E. Leonard, Pittsburgh Plate Glass Company, New York, N. Y.
 Frank H. Lutz, Railway Service & Supply Corporation, Indianapolis, Ind.
 Elmer Milbank, Detroit Lubricator Company, c/o American Radiator Company, Chicago, Ill.
 E. F. O'Connor, Edna Brass Manufacturing Company, Richmond, Virginia
 Charles A. Otto, Murphy Varnish Company, Newark, N. J.
 P. E. Raymond, William Sellers & Company, Incorporated, Chicago, Ill.
 K. F. Sheeran, Railway Purchases and Stores, Chicago, Ill.
 Glenn A. Thomson, The New York Air Brake Company, Reading, Mass.
 Joseph M. Welles, Griffin Wheel Company, Chicago, Ill.

Transportation Committee

Rolling chairs are available to convention attendants without charge during certain specified hours. These are in charge of the Transportation Committee, and convention attendants should contact with members of that committee for the use of such privileges. It is important that convention attendants wear their badges at all times, in order that there may be no misunderstandings; they should also report promptly to the members of the committee if for any reason they feel that the service is not what it should be. The chairman of this committee is S. C. Dinsmore, National Refining Company, Chicago. He is assisted by two vice-chairmen, C. S. Clingman, Johns-Manville Sales Corporation, Chicago; and Carroll Jarden, Sherwin-Williams Company, Philadelphia. The other members of the committee are:

Wm. Anderson, The Pantasote Co., Chicago, Ill.
 Phil. Arnold, The Garlock Packing Company, Cleveland, Ohio
 C. C. Bailey, General Electric Co., Schenectady, N. Y.
 Claude M. Baker, Murphy Varnish Co., Chicago, Ill.
 John Baker, Locomotive Fire Box Co., Chicago, Ill.
 A. F. Becker, American Arch Co., Chicago, Ill.
 W. T. Bell, Goodyear Tire & Rubber Co., Akron, Ohio
 Chas. A. Benz, Chicago Malleable Castings Co., Chicago, Ill.
 J. H. Bracken, Celotex Corporation, Chicago, Ill.
 Robert S. Binkerd, Baldwin Locomotive Works, Philadelphia, Pa.
 M. H. Bunting, Superior Devices Corp., Philadelphia, Pa.
 C. L. Brown, Consolidated Ashcroft Hancock Co., Chicago, Ill.
 P. D. Blanchard, The Superheater Company, Chicago, Ill.
 W. A. Callison, II, American Locomotive Co., Chicago, Ill.
 Eldon R. Campbell, L. C. Chase & Co., New York, N. Y.
 O. B. Capps, Standard Stoker Co., New York, N. Y.
 W. T. Carey, Pittsburgh Plate Glass Co., Milwaukee, Wisc.
 P. J. Christy, Chicago Pneumatic Tool Co.
 W. N. Crout, Armco Railroad Sales Co., Cleveland, Ohio.
 F. J. Cooledge, The Buckeye Steel Castings Co., Chicago, Ill.
 A. J. Couse, Edgewater Steel Co., Chicago, Ill.
 A. G. Dohm, Camel Sales Company, Chicago, Ill.
 L. P. Duggan, Garlock Packing Company, Philadelphia, Pa.
 A. H. Ehle, Edward G. Budd Manufacturing Co., Philadelphia, Pa.
 Earl H. Fisher, Wine Ry. Appliance Co., Toledo, O.
 Linton Foster, Chicago Railway Equipment Co., New York, N. Y.
 J. S. Y. Fralich, Westinghouse Air Brake Co., Chicago, Ill.
 W. W. Frazee, Gravbar Electric Co., Philadelphia, Pa.
 H. B. Gengenback, Heywood-Wakefield Co., Chicago, Ill.
 H. V. Gigandet, Canadian Railroad Service Co., Toronto, Canada.
 W. R. Gillies, Union Asbestos & Rubber Co., Chicago, Ill.
 S. P. Goodloe, Railway Supplies, Richmond, Va.
 T. P. Gorter, Pullman Standard Car Manufacturing Co., Chicago, Ill.
 R. A. Greene, Standard Oil Company of New Jersey, New York, N. Y.
 W. J. Hammond, Inland Steel Co., Chicago, Ill.
 James T. Harahan, International Supply Co., Chicago, Ill.
 F. C. Hasse, Oxweld Railroad Service, Chicago, Ill.
 L. Phil Haser, U. S. Rubber Products, Inc., Chicago, Ill.
 Harry J. Hemphill, Shill Rolling Chair Co., Atlantic City, N. J.
 L. C. Hensel, Peerless Equipment Co., Chicago, Ill.
 A. H. Hudson, American Car & Foundry Co., New York, N. Y.
 John F. Hutson, National Malleable & Steel Castings Co., Chicago, Ill.
 John Johnson, Johns-Manville Company, Cleveland, Ohio.
 R. H. Jenkins, Nathan Manufacturing Co., New York, N. Y.
 R. D. John, The Adams & Westlake Co., New York, N. Y.
 P. R. Keller, General Steel Castings Corp., Eddystone, Pa.
 E. W. Kavanagh, Ulster Iron Works, New York, N. Y.
 D. W. Lanoreaux, Journal Box Servicing Corporation, Chicago, Ill.
 T. Clay Lee, Standard Oil Co. of Indiana, Chicago, Ill.
 E. H. Leisch, The Adams & Westlake Co., Chicago, Ill.
 Wm. F. Lewis, American Locomotive Co., St. Louis, Mo.
 John H. Link, W. H. Miner, Inc., Merion Station, Pa.
 Harry Loeb, Lukens Steel Co., New York, N. Y.
 J. E. Long, Franklin Railway Supply Co., Chicago, Ill.
 Earl A. Mann, Modern Supply Company, Chicago, Ill.
 S. H. McArthur, New York Air Brake Co., Chicago, Ill.
 H. A. Morrison, Railway Age, Chicago, Ill.
 A. N. Martin, The Pyle-National Company, New York, N. Y.
 L. W. Martin, American Car & Foundry Co., St. Louis, Mo.
 M. H. McCurdy, Standard Steel Works Co., Philadelphia, Pa.
 R. W. McKisson, American Steel Foundries, Chicago, Ill.
 Roger Q. Milnes, Dearborn Chemical Co., Chicago, Ill.
 R. C. Munro, Waugh Equipment Company, Chicago, Ill.
 Benjamin Nields, National Malleable & Steel Castings Co., Cleveland, Ohio.
 W. T. O'Neill, Republic Steel Corporation, Cleveland, Ohio.
 Geo. H. Ord, Ewald Iron Co., New York, N. Y.
 R. W. Oswald, American Car & Foundry Co., Philadelphia, Pa.

Wm. J. Pallowick, Chicago Pneumatic Tool Co., Chicago, Ill.
 Lewis M. Parsons, Bethlehem Steel Company, Philadelphia, Pa.
 A. C. Pickett, Johns-Manville Sales Corporation, St. Louis, Mo.
 John D. Potts, Jr., Pettibone-Mulliken Co., Baltimore, Md.
 Geo. B. Powell, American Locomotive Co., St. Louis, Mo.
 A. W. Preikschat, National Lock Washer Co., Chicago, Ill.
 J. D. Rhoads, Graybar Electric Co., Baltimore, Md.
 R. L. Robinson, American Brake Shoe & Foundry Co., Chicago, Ill.
 John B. Sanford, The Sherwin-Williams Co., Cleveland, Ohio.
 John H. Sharp, Grip Nut Co., Chicago, Ill.
 R. A. Sherman, General Steel Castings Corp., Granite City, Ill.
 R. Sonquist, American Steel Foundry, New York, N. Y.
 Hynes Sparks, Symington-Gould Corp., New York, N. Y.
 George Struble, Bethlehem Steel Co., Bethlehem, Pa.
 F. A. Streiff, Southern Wheel Co., New York, N. Y.
 C. W. T. Stuart, Safety Car Heating & Lighting Co., Philadelphia, Pa.
 B. W. Taylor, SKF Industries, Inc., Philadelphia, Pa.
 W. H. Tucker, Vapor Car Heating Co., New York, N. Y.
 M. J. Turner, Magnus Metal Corporation, Wilmette, Ill.
 G. S. Turner, T-Z Railway Equipment Co., Chicago, Ill.
 H. W. Van Sweringen, Chicago Railway Equipment Co., Chicago, Ill.
 J. E. Vaughn, Union Metal Products Co., Chicago, Ill.
 R. R. Vinnedge, Socony-Vacuum Oil Co., New York, N. Y.
 R. R. Wells, Hunt-Spiller Manufacturing Corp., Berkeley, Cal.
 Laurence Wilcox, Westinghouse Air Brake Co., Chicago, Ill.
 L. F. Wilson, Wilson Engineering Co., Chicago, Ill.

Badge Committee

The Badge Committee would have a difficult enough time if it had only to do with the preparation of the designs for the badges. Some idea of the variety and complications involved may be gathered from the following classes of attendants who must be registered: members of Mechanical Division, members of Purchases and Stores Division, members of Air Brake Association, officers of Association of American Railroads, members of Railway Supply Manufacturers' Association, railroad ladies, supply ladies, guest ladies, and guests.

Another difficult task has been that of making a reasonably accurate forecast of the number of badges which must be provided in each of these classifications. Franklin H. Smith, of the Gold Car Heating & Lighting Company, Brooklyn, N. Y., is chairman of the committee, and associated with him is F. E. Dodson of the United States Rubber Products, Inc., Baltimore, Md., another member of the Executive Committee.

Hotel Committee

The hotel facilities at Atlantic City are, of course, taxed to the very limit while the conventions are in progress. The Hotel Committee plans in advance with the hotel men's organization at Atlantic City, to take care of the great crowd during the convention. It is always glad to do anything it can to adjust misunderstandings or complaints about hotel accommodations and to see that the guests are properly taken care of. The chairman of the committee is J. W. Fogg, MacLean-Fogg Lock Nut Co., Chicago, and he is assisted by W. H. S. Bateman of Philadelphia, Pa., a past president of the Railway Supply Manufacturers' Association.

Other Committees

Finance Committee—This committee has to do with all matters relating to finance. The chairman is Charles J. Nieman and he co-operates with President Down and Secretary-Treasurer Conway.

By-Laws Committee—This committee has the responsibility of studying the application of the by-laws and recommending revisions, when it seems advisable to make them because of changing conditions. The chairman is Victor W. Ellet and he has associated with him J. F. O'Brien.

Three other committees have functioned to a greater or less extent during the past seven years, although they are not primarily associated with the holding of the conventions at Atlantic City. Naturally the railway supply industry is vitally interested in the success of the railroads and a Public Relations Committee, headed by

H. E. Graham, has been charged with the responsibility of seeing what, if anything, could be done by the R.S.M.A. to help bring about better relations between the railroads and the public.

Walter C. Sanders has acted as chairman of a Foreign Trade Committee and Frank P. Roesch, vice-president of the Standard Stoker Company, Chicago, headed up a Domestic Trade Committee, which accomplished certain objectives which were assigned to it, and has since become inactive.

A Few Facts About the Officers

Sidney G. Down, the president of the Railway Supply Manufacturers' Association, is vice-president of the Westinghouse Air Brake Company and is a director, or a director and officer of several associated companies. He was born in Michigan on New Year's Day of Centennial Year, 1876, receiving his education in the public schools of Detroit. This was supplemented by special engineering training in a technical school of that city.

Mr. Down was in the service of the Michigan Central for four years, 1893-97. While firing a locomotive he became interested in a study of the air brake and soon found his fellows calling upon him for information about its operation. He prepared a series of lectures in his spare time and soon found himself the leader of a study group, thus becoming one of the first air brake instructors in this country. In 1897 he caught the gold fever and spent the next few years exploring and prospecting in the northwest territory of Canada and Alaska.

He re-entered the service of the Michigan Central as general air brake instructor and inspector in 1900, leaving that company to go with the Westinghouse Air Brake Company as a traveling instructor, January 1, 1902. He has remained with that company ever since, advancing to more and more important positions. His work has taken him to the Orient twice, and he has traveled widely through South America and Europe. Because of the long lapse of time between exhibits, due to economic conditions, Mr. Down has established and promises to maintain a record for length of time in the presidency of the association.

The vice-president of the R.S.M.A., Daniel L. Eubank, was born in Churchville, Va., November 24, 1869, and entered the service of the Chesapeake & Ohio in 1888 as a section laborer. He became a locomotive fireman a year later and was promoted to engineer in 1892. In 1903 he was made road foreman of engines, remaining in that capacity until 1911, when he became a service engineer for the Galena Oil Corporation. In 1919 he was made a district manager of that company and from 1922 to 1932 was supervising service engineer. Since 1932 he has represented a number of leading railway supply manufacturers in the South with headquarters at Atlanta, Ga.

Mr. Eubank has always been an enthusiastic worker in the R.S.M.A. and for a period of more than a quarter of a century was active in the Traveling Engineers' Association and the railway supply organization associated with it.

The secretary-treasurer, John D. Conway, is a Pennsylvanian, having been born at Vanport, Pa., December 15, 1863. He entered railroad service as a telegraph operator on the Cleveland & Pittsburgh in 1881, leaving that position to accept a similar one with the Pittsburgh & Lake Erie in 1885. In 1888 he became a clerk in the motive power department and from 1891 to 1910, was chief clerk in that department. He has served continuously since 1910 as secretary-treasurer of the Railway Supply Manufacturers' Association.

When Conventions First Came To Atlantic City In 1906

There were some skeptics but in spite of cold and rain the venture proved a big success

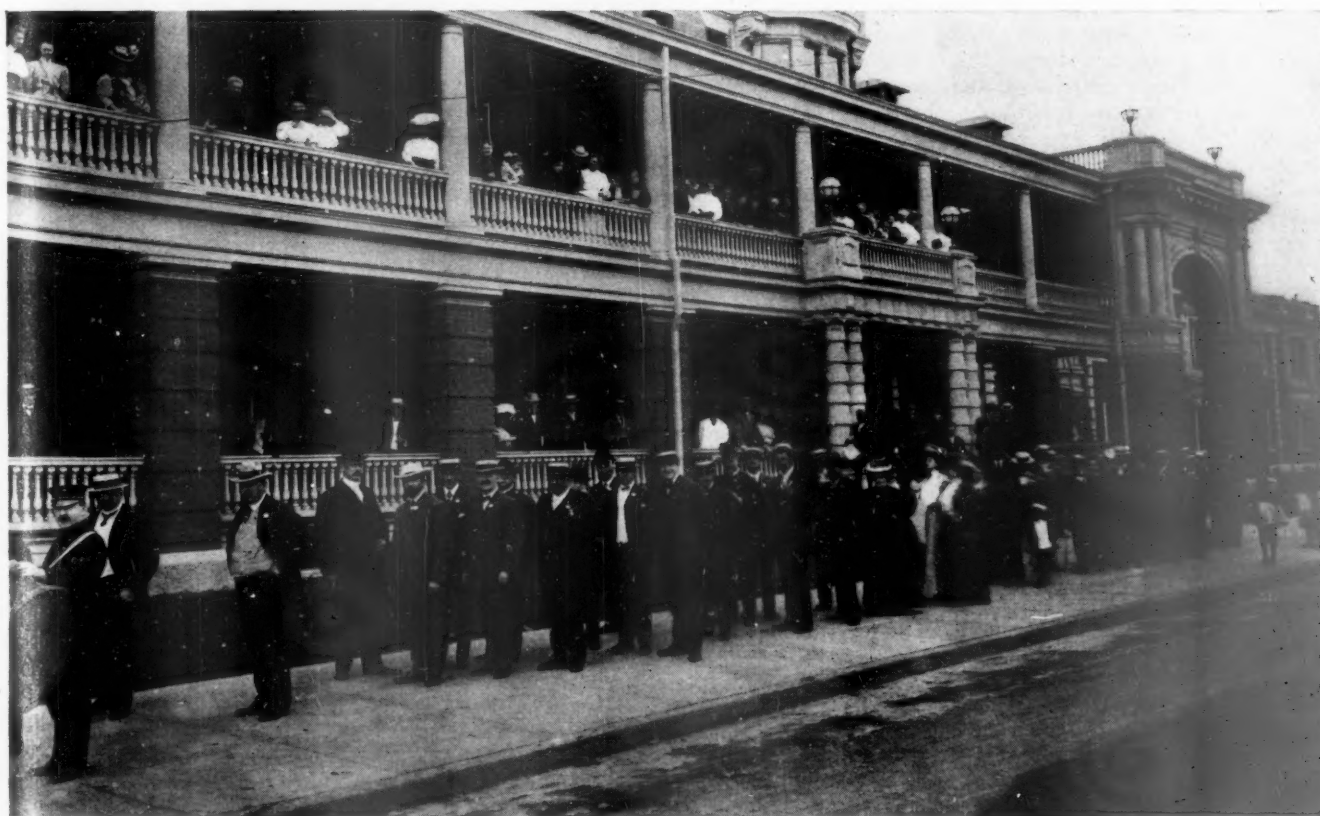
By L. B. Sherman

ON THE eleventh day of December, 1905, there was held at the Manhattan Hotel, New York City, an extremely interesting and at times exciting meeting. It was a joint executive committee meeting of the Master Car Builders', American Railway Master Mechanics' and Railway Supply Manufacturers' Associations.

The gathering was held to decide the location for the meeting of these associations and for the railway exhibit in June of the following year. The large meeting room in the Manhattan Hotel was filled to capacity. The

throughout the country then presented their claims for recognition. Many cities wanted our gatherings.

We still remember that Mayor Stoy, of Atlantic City, stated in his opening remarks that if the conventions and exhibit ever went to Atlantic City once, they would never go anywhere else. We thought at the time that the Mayor's statement was a "wish father to the thought." We had our doubts about going to Atlantic City, although it had presented its claims to us for several years previous. The consensus of opinion was that Atlantic City and its hotels were too widely scattered to hold our



The Parade Forming at the Chalfonte Hotel for the March to the Steel Pier. Among the Familiar Faces we Note: Mayor Stoy, Joseph E. Buker, President M. C. B. Association, W. E. Symons, Peter Peck, E. B. Leigh and C. A. Seley

committee on location consisted of F. K. Shults (chairman), A. E. Mitchell (Erie) and G. W. Wildin (Erie). It submitted simply an "open verdict," saying the joint meeting of all of the interested associations present should hear the arguments and make the decision. To this all agreed. Several leading officials of various cities

crowd together. There were too many attractions on the Boardwalk and on the several great steel piers that extended from the Boardwalk way out into the old Atlantic.

Atlantic City won by an almost unanimous decision, and not only that but Mayor Stoy's "prophecy" has

been fulfilled up to the present time. That was thirty-one years ago and we have never held the conventions and exhibit in any other city. The dates selected were June 13 to 20, inclusive, and it was decided to have the convention meetings and exhibit on the Steel Pier (In following years the meetings and exhibit were held on Young's Million Dollar Steel Pier, until 1930).

It was a big undertaking in the winter and spring of 1905 to make arrangements for the conventions and exhibit for the following June. No hotel had been chosen as headquarters; the meetings of the associations were to be held in Casino Hall on the Pier. Locating and placing of the exhibits on the Pier was a real job. It was all so new and untried. Director of Exhibits L. B. Sherman, as well as other members of the executive committee of the R.S.M.A., went to Atlantic City and remained sometime during every month of the winter and spring, until the opening day arrived. Not only booths and attractive display quarters had to be planned and partitioned off and decorations decided on and purchased, but piping for steam and compressed air, as well as electric wires for special lights and power, had to be installed on the Pier. There was no charge for exhibit space, aside from the membership fee of \$35.

It Sure Did Rain!

The entire Pier was finally laid out and spaced for exhibit booths, but there was no permanent covering or protection for many of them. When the work was well toward completion some bright individual suggested that it might possibly rain during the conventions. Our Atlantic City friends scoffed at the idea, but nevertheless, inasmuch as a majority of the booths were not sheltered, bad-weather protection in the way of canvas awnings was provided. And did it rain? It did! At times the heavens descended—not simply drops of rain but solid water. It was well the protection had been attended to.

As far as the work of the two railway conventions was concerned an extensive program had been prepared during the winter by Secretary Taylor and the program committees.

In those days now long gone by, perhaps the work of the railway associations' committees was not up to par. Editors of the railway papers at that time were asking for better prepared reports—for more co-operation and effort by the committee members. Editor Boardman of the Railroad Gazette, for instance, in his characteristic way (he was known for his expert use of a sharp pencil) said in the issue of his paper of June 15:

Editor Had a "Sharp Pencil"

"Committee work for the Master Mechanics' and the Master Car Builders' Associations is generally a misnomer, as reports are really papers by nominal chairmen of the respective committees. Occasionally it happens that all the members assist in the work of research or compilation, but more often the proceeding is something like this: The chairman of the committee draws up a circular of inquiry; this is sent to other members of the committee for their suggestions or approval—generally approval without suggestions; the secretary sends out this circular and a small number of members reply. These replies are sent to the chairman who compiles and if necessary composes the report. The committee reads and again says "O.K.," or sometimes nothing, and the work is done. It is fair to say that this is not always the case, but it is reasonable to assume that the formula

obtains in at least 50 per cent of the committee reports. * * *

"If the chairman does the principal work he should get the credit (whatever that may mean) for the work. A report should state concisely the purpose of the investigation, the general amount of information available or contributed, an expression of the views of the majority of the authorities and the deductions and recommendations of the committee. * * *

"The presentation of the paper is also of great importance, and as the matter is now printed and distributed in advance of the meeting, it is wearisome to have a long report read through verbatim and if in drawing up the report some prominent features could be put together in a paragraph or in such shape that they could easily be separated from the main body of the discussion it would permit of a ready means of abstracting and getting the principal points to the convention in a minimum of time and allow the bulk of the time for the discussion which may be more or less animated. When a long paper is read through and the members have previously gone through the printed document they are apt to be so tired by the time the reading is finished that there is little life left to properly discuss the features presented, particularly if the morning be warm or if the dinner hour is approaching."

Everything In Place On Time

The complete exhibit occupying nearly 70,000 sq. ft. of space extending from the shore to Casino Hall was in readiness for the opening day. Both large and small exhibits were located on the Steel Pier with the exception of the large Niles-Bemant-Pond driving wheel lathe, for which was provided a special booth located within ten minutes walk of the Pier. The track exhibits were located on the side tracks at the Pennsylvania Station. The exhibits, both in number and in total floor space occupied, greatly exceeded any previous year's exhibit. For instance, the official figures show that at Manhattan Beach where the exhibit was held in 1905 there were 208 exhibitors occupying a total floor space of 38,123 sq. ft., whereas in 1906 the number of exhibitors was 254, covering a total floor space of 66,350 sq. ft.

As for the Atlantic City hotels, 17 of the leading hostleries agreed to reserve 2,040 excellent rooms, with 825 private bath rooms, at special rates for those who attended the conventions. These hotels fulfilled well their contract and did as they had agreed.

Well, the opening day arrived—June 13. Crowds lined the Boardwalk to witness the parade, led by President Buker of the M.C.B. Association, to the Pier. Bands played, flags gayly waved along the route of the line of march and in the windows of the adjoining hotels. The opening session was a joint meeting of the two railway organizations. The presiding officers were Joseph E. Buker (Illinois Central), president of the Master Car Builders' Association, and H. F. Ball, (L. S. & M. S.) president of the Master Mechanics' Association. The meeting was called to order promptly at 9:30 A.M., followed by an invocation by Reverend Caldwell. Mayor Stoy delivered the address of welcome to which George A. Post happily, as usual, responded and accepted the most generous welcome.

Joe Buker President M. C. B.

President Buker's address was quite illuminating, pointing out that from a little gathering in Springfield, Mass., in May, 1867, at which time there were 39,000

miles of railroad in the United States, with 268 engines, 16,135 freight cars and 220 passenger cars, the Master Car Builders' Association had grown until today the Association had become the greatest association of its kind in the world, with a membership of 629, having jurisdiction over 2,047,327 freight cars valued at approximately \$1,037,341,800, composed of vehicles to move 1,277,771,573 tons of freight annually, producing a revenue of \$1,374,102,275; also 41,981 passenger cars valued at approximately \$251,886,000, handling 716,244,858 passengers, producing an annual revenue of approximately \$456,343,380 and operating over 293,937 miles of railroad. These figures did not include cars owned by individual or private companies; the value of such freight cars on June 30, 1904, was \$72,000,000 and of cars operated by the Pullman Company \$51,000,000, or a total of \$123,000,000, making a grand total of \$1,412,227,800 approximate value of passenger and freight cars.

The 39th annual convention of the American Railway Master Mechanics' Association was held June 18-19-20. President H. F. Ball, (Lake Shore & Michigan Southern) presided. Like the Master Car Builders' Convention this was the largest meeting the association had ever held, the attendance of members being 350 as against 260 in the year previous. Mr. Ball in his opening remarks said that from the inception of the association 38 years ago, each successive convention had marked a period of advancement in the work at this meeting. He added they would have presented to them matters of even greater importance than have been considered heretofore. As for statistics compiled for the year 1905 they showed a large increase in the output of the new locomotives over 1904, the increases being in the case of locomotives for domestic use and for export 60 per cent; compound locomotives for domestic use 34 per cent; balanced compound locomotives for domestic use 85 per cent; electric locomotives 47 per cent.

Among the "conventionalities" in the Daily issues of the *Railway Age* published during the conventions of 1906 were the following:

"The Ladies' receptions are being held in the parlors of the Chalfonte Hotel; excellent musical talent is provided. The ladies' musical will be held in Casino Hall on the Steel Pier. A star performance in the entertainment line will be the Supply Men's Amateur Vaudeville performance at Casino Hall at the end of the Steel Pier. Informal dancing will follow."

"The great event of the week will be the baseball game Saturday at Inlet Park between teams composed of supply men of the east against the west."

"Robert F. Carr and wife (nee Louise Smiley), of Chicago, having just returned from their wedding tour at Virginia Hot Springs, are in attendance at the convention."

"A special train on the Pennsylvania from North Philadelphia to Atlantic City Monday preceding the opening of the conventions attained a maximum speed of 96 to 104 miles an hour. 'The experienced conductor of this train thought it best on account of the high speed to feel his way from one car to another by making use of the hand rails.'"

"Mayor Stoy says the newspaper paragraphs now going the rounds of the United States to the effect that he eats 800 banquets a year is false. He doesn't attend more than 475 or 500 banquets a year, at the most."

George A. Post, R.S.M.A., certainly made a most happy reply to Mayor Stoy's address of welcome during the opening exercises. In his inimitable way he said, among other things, after listening to the Mayor's speech: "I certainly had no idea that I was going to be

impressed into service this morning, but now that I have heard the Mayor's address (I have heard this same address now for the 16th time) I will repeat what you already know. Brother Stoy has been Mayor here ever since Adam's youngest child was born and he is expected to remain so as long as he will continue to make this speech and make it sound new every time, as he has this morning."

"The Railroad Gazette, in a fine editorial on the work of the two railway associations, said in its issue of June 29: 'It would be difficult to exaggerate the importance to the technical and railroad world of the conventions of the Master Car Builders' and Master Mechanics' Association that are held in June of each year. The days when they were looked upon askance by the railroad managers and were little more than a junket have long since passed away, and in their stead we have a gathering that is noted for its steadfastness of its purpose and the high character of work that is done.'"

"The most welcome sound on the Pier yesterday was the chirp of the cheerful radiator. The weather man will please fire up the heating plant a bit. Yesterday was a little cool for light underwear, short-sleeved shirt waists, low shoes and silk hose, which are all such necessary parts of convention wardrobes."

"WANTED a first-class catcher to play on the Western Men's ball team Saturday. Apply to Captain Midgley, Haddon Hall."

"Motor Car No. 7, built by the Union Pacific at its Omaha shops under the direction of W. R. McKeen, superintendent of motive power arrived yesterday, and is now on the tracks in the Philadelphia Reading Station. This car has aroused much interest among railway men."

Telephones

A telephone switchboard will be in operation on a 24-hour basis throughout the convention. All convention telephones, including those in exhibitors' booths, will be tied into this switchboard. The phone number is 4-7181.

Post Office

United States mail addressed care of R. S. M. A., Secretary's Office, Atlantic City Auditorium, Atlantic City, N. J., will be taken care of and distributed to exhibitors' booths. Members are requested not to send general circular matter for distribution to other exhibitors, as this is a violation of the Association Rules.

I.C.C. Order on Power Reverse Gears

The Interstate Commerce Commission announced on June 14 that it had decided to order installation of power reverse gears on all steam locomotives built after September 1, 1937, and on all steam locomotives used in road service, built prior to September 1, 1937, which weigh on driving wheels 150,000 lb. or more, and all steam locomotives used in switching service built prior to September 1, which weigh on driving wheels 130,000 lb. or more. The gears must be installed on the locomotives now in service the first time they are given repairs defined by the U. S. Railroad Administration as Class 3 or heavier. All such locomotives shall be so

equipped by September 1, 1942. The order also says that when steam connections to air-operated power reverse gear are used, the operating valve shall be conveniently located in the cab of the locomotive and so arranged and maintained that in case of air failure, steam may be quickly used to operate the reverse gear.

Bathing

Special arrangements have been made for bathing at the Ambassador Hotel for members attending the railroad conventions and their families. Choice can be had of indoor or surf bathing.

The fee, including beach and pool, using your own suit, is thirty-five cents, or sixty cents using the hotel suits. There will be a section of 25 beach chairs and umbrellas reserved for the use of members of the association. This will be under the direction of the members of the Bathing Committee of the Entertainment Committee of the R.S.M.A.

Registration Hours

The Enrollment Committee started to register convention attendants Monday afternoon. Today the enrollment office at the entrance to the Auditorium will remain open from 9:00 a.m. to 9:00 p.m. During the remainder of the week the hours will be from 9:00 a.m. to 6:00 p.m.

Golf

The following golf clubs of Atlantic City extend the courtesies of their golf courses to visiting members of the A.A.R. and R.S.M.A. Greens fees must be paid at the clubs.

Country Club of Atlantic City
Linwood Country Club
Seaview Golf Club

Taxicabs will have a special rate for one or five persons of \$2 each way to the Country Club of Atlantic City, or \$2.50 each way to the Seaview or Linwood.

Information concerning public conveyances (bus or trolleys) will be furnished by the Information desk.

Entertainment Committee, Attention!

An important meeting of the Entertainment Committee of the R.S.M.A. will be held at 11 o'clock this morning in Committee Room No. 1, on the second floor of the Auditorium. This committee is an unusually large body, as shown by the names listed in the article on the Railway Supply Manufacturers' Association, elsewhere in this issue. It has been impossible to insure individual notices reaching each member and the *Daily* has been asked to publish this call for the meeting prominently.

Rolling Chairs

The Transportation Committee will provide rolling chairs for members and guests of the convention wearing official badges, from the following stations, as well as other locations on the Boardwalk which may be re-

quested, between the hours indicated, from June 16 to June 23, inclusive:

	A. M.	P. M.
Auditorium	8:30	6:00
Ambassador Hotel	8:30	6:00
Marlborough-Blenheim	8:30	6:00
Traymore Hotel	8:30	6:00
Knickerbocker Hotel	8:30	6:00
Chalfonte Hotel	8:30	6:00
Strand Hotel	8:30	6:00
Grand Ball Evenings only	P. M.	P. M.
	8:30 to 10:00	

Unoccupied chairs may be stopped at any point on the Boardwalk, except between the Marlborough-Blenheim and the Auditorium, and they may be used in either direction.

Convention chairs are not allowed to wait more than fifteen minutes. The Transportation Committee will consider it a favor if members or guests of the Association will report to the committee any inattention on the part of an attendant. If the number on the chair is given, it will facilitate checking the complaint.

E. P. Williams, Jr., Killed by Auto

Edward P. Williams, Jr., foreign sales manager of The Baldwin Locomotive Works, was accidentally struck by an automobile, near his home in Ridley Park, Pa., on the night of June 12, 1937, and died in the Taylor Memorial Hospital the following morning. Mr. Williams was born in Wayne, Pa., September 16, 1890. At the age of 19 he entered the employ of The Baldwin Locomotive Works, with which his father had been connected for many years. In 1912 he went to China as technical representative for Baldwin and remained there until August, 1934, when he returned to the United States to become foreign sales manager.

Promotions on Illinois Central

A. G. Gebhard, general foreman at the Markham (Chicago) roundhouse of the Illinois Central, has been promoted to master mechanic of the Louisiana division with headquarters at McComb, Miss., to succeed J. N. Chapman, who has been assigned to other duties. P. O. Christy, general foreman at Centralia, Ill., has been appointed assistant master mechanic at Markham, in which capacity he succeeds to the duties of Mr. Gebhard.

Air Brake Association Meets Tomorrow

The Air Brake Association, in order to take advantage of the exhibit at Atlantic City, decided some time ago to hold a two-day meeting here this week—Thursday and Friday, June 17 and 18. Its headquarters and meetings will be held at the Haddon Hall Hotel.

A. A. R. Public Relations Committee to Meet

The Advisory Committee on Public Relations of the Association of American Railroads will meet at the Hotel Traymore on Thursday and Friday mornings, June 17 and 18, at 10:30 o'clock. Col. Robert G. Henry, assistant to the president of the A.A.R., is ex-officio
(Continued on page 1004D18)

Large Motive Power Units Feature Track Exhibit

Nine locomotives—steam, Diesel and electric—represent the latest examples in the field of switching, freight and passenger service

Location of Locomotive Track Exhibits

On Track 8 in Station:

- P. R. R. Electric Locomotive No. 4813
- P. R. R. Streamline Steam Locomotive No. 3768
- P. R. R. Eight-Wheel Steam Locomotive No. 1223

On Steam Tracks Behind Express Building:

- B. & O. Four-Cylinder Steam Locomotive No. 5600
- B. & O. 3,600 Hp. Diesel-Electric Locomotive No. 51
- U. P. 4-6-6-4 Steam Locomotive No. 3915
- Alco 600 Hp. Diesel-Electric Switcher No. 600
- B. & M. 4-8-2 Steam Passenger Locomotive No. 4109
- So. Pac. 4-8-8-2 Locomotive No. 4171

THE latest examples of modern railroad motive power await the visitor to this year's track exhibit of locomotives at the new passenger station of the Pennsylvania-Reading Seashore Lines at Arkansas and Missouri Avenues. The exhibit, at two locations within the station area, is made up of nine units representing motive power for a wide range of switching, freight and passenger services in the fields of the steam, Diesel and electric. One of these nine units, by way of contrast, is an eight-wheel passenger locomotive built 32 years ago.

Those who remember the 1930 exhibit of four steam and five internal-combustion locomotives will be impressed by the remarkable advance in the development of both types that has taken place in the intervening time. The steam locomotives continue to show the influence of the demand for higher speed and capacity and longer runs, resulting in the introduction of many new

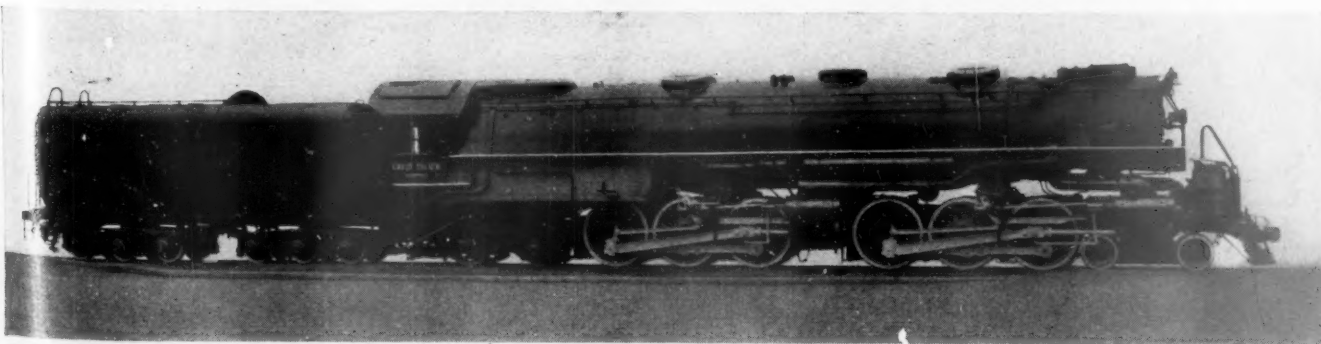
materials and accessories. Refinement in design is plainly evident. The Diesel, since 1930, has gone into road service and one of the latest examples of high-speed passenger locomotives will prove of unusual interest.

P.R.R. Electric Passenger Locomotive, No. 4813

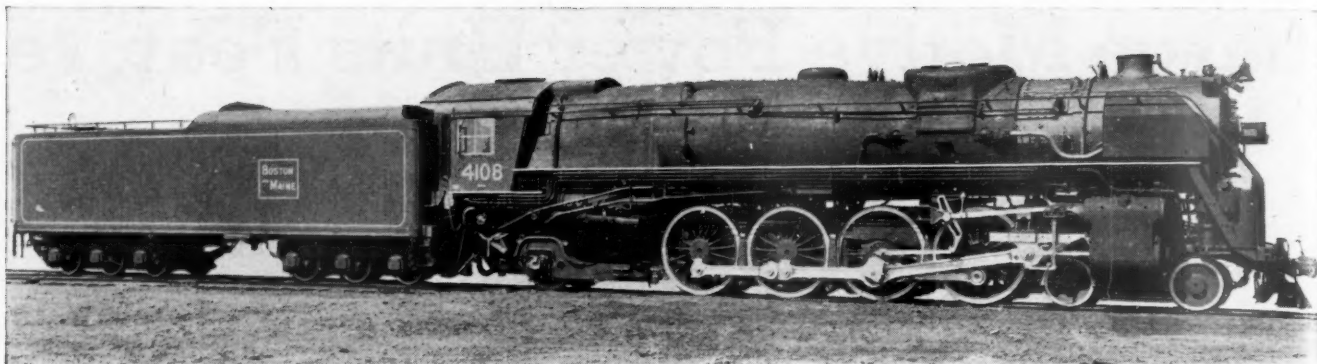
The Pennsylvania is exhibiting one of its type GG1 streamline electric passenger locomotives having a 2-C + C-2 wheel arrangement. These units were developed to meet the high-speed large-power requirements of heavy passenger service on the electrified main lines. This locomotive develops a maximum of 7,000 hp. and has a continuous rating of 4,620 hp. at 90 m.p.h. The maximum tractive force is 72,800 lb. Track tests made on a special section of Brinell track by means of electric recording devices show the locomotive to have exceptionally good riding characteristics with small lateral forces exerted on the rail at high speed. The total length of this locomotive is 79 ft. 6 in., the total wheel base is 69 ft. 0 in. and the rigid wheel base is 13 ft. 8 in. The total weight is 460,000 lb. and the weight on drivers is 300,000 lb. This locomotive was described in the *Railway Age* for February 15, 1936, page 278.

Pennsylvania Steam Locomotive, No. 3768

An exceptionally pleasing example of the streamlining of a steam locomotive is that of P. R. R. No. 3768 which was developed as a result of many months of test work on the part of the railroad's engineering and technical advisory staff in the aerodynamic laboratory at New York University. Wind tunnel tests, made with models of the locomotive, tender and one coach, indicated a reduction in air resistance of 33 per cent in horsepower at 100 m.p.h. This locomotive is a class K-4-s Pacific type passenger unit which was rebuilt at Altoona Shop in the early part of 1936. It has an overall length of 95 ft. and the engine weight, in working order, is 337,850 lb. The weight of the tender, loaded, is 289,700 lb. A



Union Pacific 4-6-6-4 Articulated Single-Expansion Steam Locomotive Built by The American Locomotive Company



Boston & Maine Class R-1-B Mountain-Type Locomotive Recently Delivered by the Baldwin Locomotive Works

description of the locomotive appeared in the *Railway Mechanical Engineer* for April, 1936.

Baltimore & Ohio Locomotive, No. 5600

Of especial interest is the new B. & O. Class N-1 four-cylinder single-expansion 4-8-4 passenger locomotive "George H. Emerson" which was turned out of the Mt. Clare shops this month. This locomotive is equipped with the Emerson water-tube firebox. The four single-expansion cylinders are each 18 in. bore by $26\frac{1}{2}$ in. stroke and each pair of cylinders drives two pairs of coupled wheels. The rear cylinders are located outside the frame between the rear drivers and the trailer. The second and third pairs of wheels are the main wheels for front and rear engines, respectively. The tractive force is 65,000 lb.

The boiler is 80 in. diameter, inside, and is of the combined fire- and water-tube, having a working pressure of 350 lb. The firebox has 166 $2\frac{1}{2}$ -in. water tubes and the fire tubes are $5\frac{1}{2}$ in. and $2\frac{1}{4}$ in. in diameter, respectively, there being 40 of the former and 190 of the latter. The fire tubes are 25 ft. in length. The firebox has 677 sq. ft. of heating surface; the tubes and flues 4,220 sq. ft., making a total evaporative heating surface of 4,897 sq. ft. The superheating surface is 1,312 sq. ft. The grate is 84 in. wide by 138 in. long and has an area of 80.5 sq. ft.

The driving wheels are 76 in. in diameter with 11-in.

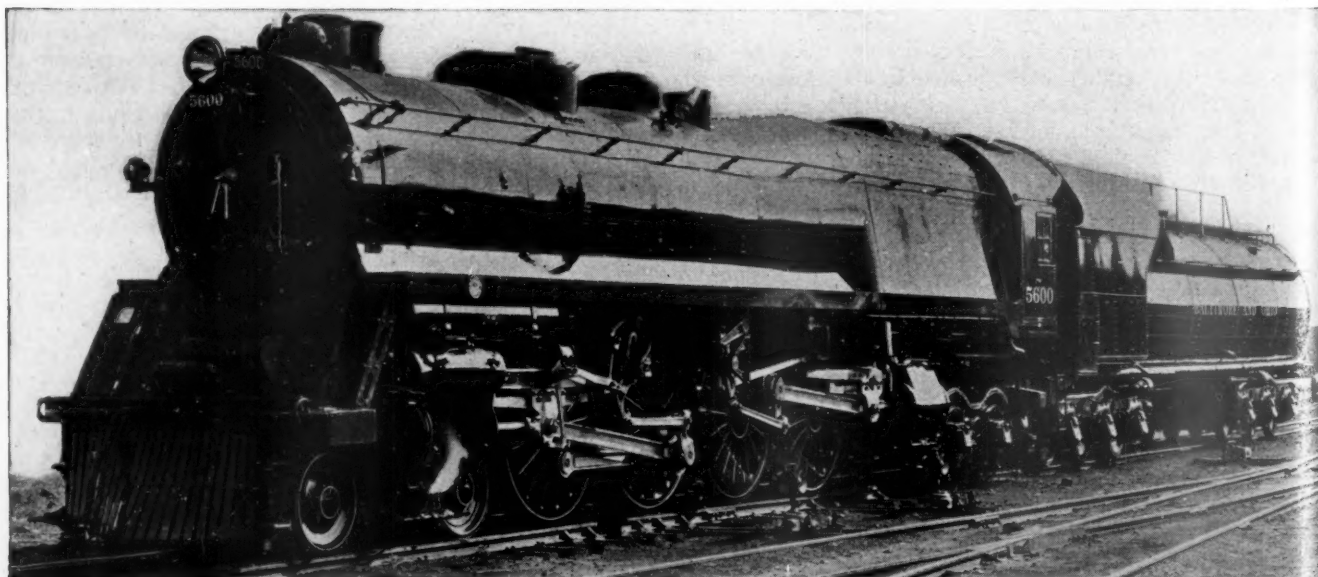
by 13-in. journals on the main axles and 10-in. by 13-in. on the other driving axles. The engine-truck wheels are 36 in. diameter and the trailer-truck wheels, 42 in. diameter. The rigid driving wheel base is 6 ft. 7 in., the total driving wheel base 19 ft. 9 in. and the total engine wheel base, 48 ft. $6\frac{1}{2}$ in. The total engine and tender wheel base is 103 ft. $7\frac{1}{4}$ in. The weight on drivers is 238,000 lb., the total engine weight 386,500 lb. and the total engine and tender weight 736,500 lb.

The tender is of the Vanderbilt type with cast-steel water bottom and frame, having a coal capacity of 23 tons and a water capacity of 22,000 gal. The tender is equipped with six-wheel trucks and a water scoop.

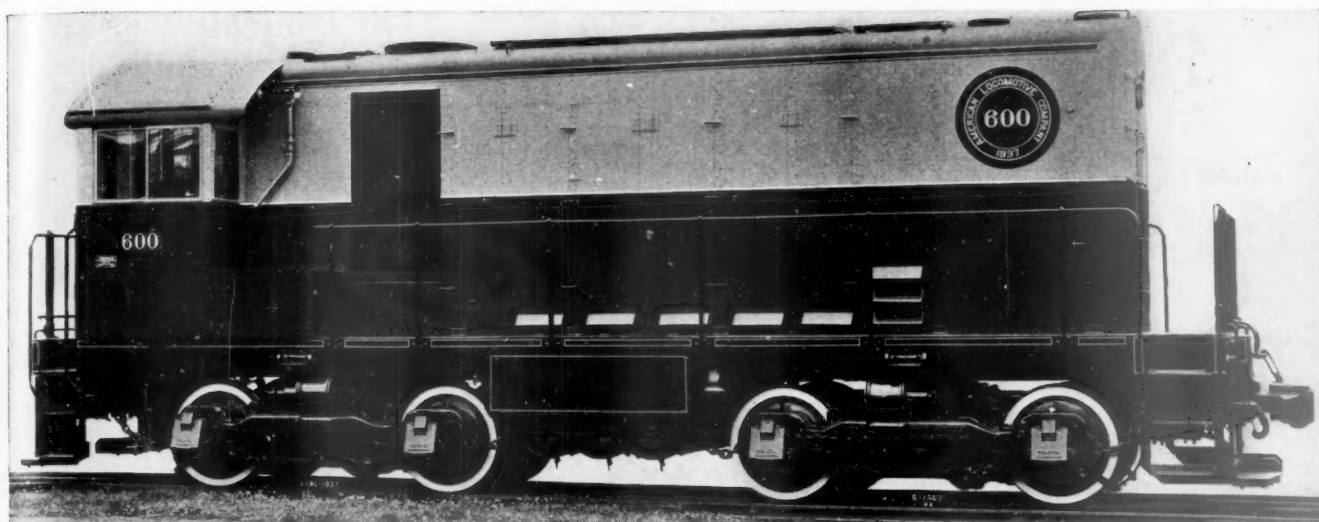
This locomotive is equipped with Walschaert valve gear, four-wheel trailer truck, stoker, rolled-in superheater units, horizontal air compressor, motorized lubricator, train control, and lateral cushioning device.

The Baltimore & Ohio 3,600-Hp. Diesel-Electric, No. 51

The Baltimore & Ohio 3,600-hp. Diesel-electric locomotive, built by the Electro-Motive Corporation, is composed of two 1,800-hp. units, coupled for multiple-unit operation from a single control station in the cab of the leading unit. The motive power for the 1,800-hp. units, generally referred to as the A and B units, is identical and consists of two 900-hp. Diesel-electric power plants controlled simultaneously from the main locomotive



Baltimore & Ohio Four-Cylinder Single Expansion Locomotive Recently Built at Mt. Clare Shops



Alco 100-ton Diesel-Electric Switcher Equipped with 600 Hp. Diesel Engine

throttle. The length over coupler pulling faces of the A unit is 71 ft. 4 $\frac{3}{4}$ in. and the B unit, 69 ft. 8 in.

The total weight of the locomotive, with full supply of fuel, water and sand, approximates 568,000 lb., this weight consisting of 284,400 lb. for the A unit and 283,600 lb. for the B unit. These weights are again divided between the two six-wheel trucks of each locomotive unit, each of which has two driving and a single idle axle. This distribution provides an average wheel loading at the rail of 22,500 lb. for the idle axle and 23,400 lb. for the drivers.

Union Pacific 4-6-6-4 Single-Expansion Articulated Locomotive, No. 3915

The Union Pacific 4-6-6-4 type locomotive is similar to the single-expansion articulated locomotives built by the American Locomotive Company for this road in 1936 and is designed for high-speed freight service and operation in mountain territory. It has a total engine weight of 582,000 lb., of which 403,000 lb. is on the drivers, and develops a starting tractive force of 97,400 lb. The boiler carries a working pressure of 255 lb. per sq. in.; the cylinders are 22 in. by 32 in., and the driving wheels 69 in. in diameter. The boiler has a combined heating surface of 7,031 sq. ft. and the grate has an area of 108.2 sq. ft.

The design of this locomotive includes a number of unusual features. Among the features of particular interest is the use of silico-manganese steel in the barrel courses of the boiler, the backbone construction built

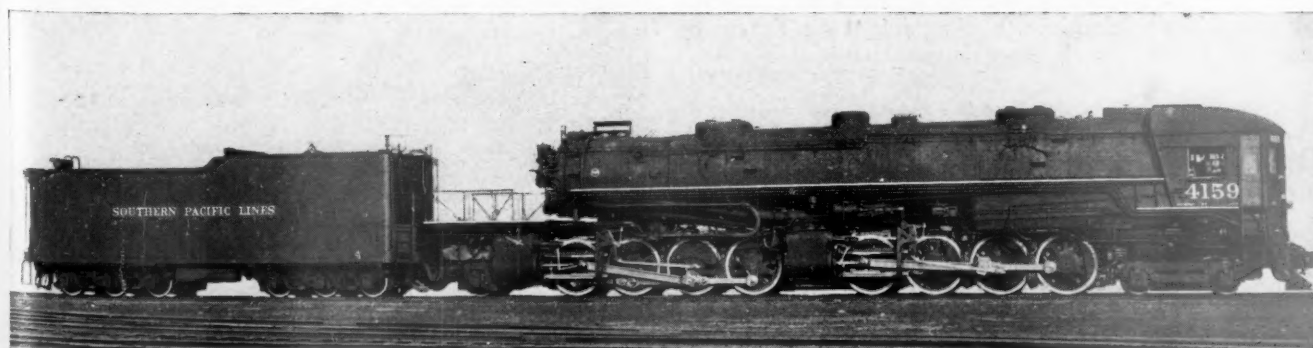
into the frame system of the front engine, and the universal flexibility of the articulation hinge, with special provision for stabilizing the riding of this unit under the single bearing by which the boiler is supported.

Alco Diesel Switcher, No. 600

The Alco 600 hp. Diesel-electric switcher on exhibit is one of that company's standard switching locomotives, similar to the 68 such locomotives now on service on 25 railroads in the United States. It is powered by an Alco 600-hp. six-cylinder four-cycle Diesel engine and is equipped with General Electric main and auxiliary generators, traction motors and control equipment. The weight, in working order, is 198,500 lb. and the tractive force, at starting, is 59,550 lb. The underframe is of Commonwealth cast-steel construction. The four-wheel trucks are both power trucks, each equipped with two traction motors and have 40-in. wheels and cast-steel truck frames and bolsters. They are of a design which provides for positive equalization regardless of track condition.

Boston & Maine Steam Locomotive, No. 4108

This locomotive is one of the five B. & M. Class R-1-B Mountain-type locomotives recently ordered from the Baldwin Locomotive Works for manifest freight service. It has an overall length of 92 ft. 8 in. and is capable of developing a maximum tractive force of 67,000 lb. The weight of the engine in working order is 417,750



Southern Pacific 4-8-8-2 Articulated Single-Expansion Steam Locomotive Built by The Baldwin Locomotive Works for Operation Through Tunnels

lb., and the total weight of the tender loaded is 369,100 lb. It is equipped with Type E superheaters, a feedwater heater, a stoker, four Thermic syphons, and Baldwin disc-type driving wheels. The bed is a one-piece steel casting with cylinders cast integrally.

Southern Pacific 4-8-2 Type Locomotive, No. 4171

The Southern Pacific 4-8-2 simple articulated steam locomotive, No. 4171, included in the track exhibit is the most recent locomotive of this type built for the Southern Pacific by the Baldwin Locomotive Works. This locomotive is designed for use in heavy passenger and freight service over the heavy mountain grades of the Sacramento division between Roseville, Calif., and Sparks, Nev., a distance of 139 miles, with maximum grades up to 2.6 per cent. Advantage has been taken of the fact that the locomotive burns oil, to place the cab at the forward end, the tender being coupled to the smokebox end of the locomotive. The purpose of this arrangement is to keep the cab clear of smoke and gases when the locomotive is operating through tunnels. This locomotive is designed for a boiler pressure of 250 lb. and operates at a maximum cut-off of 70 per cent. The cylinder size is 24 in. by 32 in. With 63½-in. driving wheels the tractive-force rating is 123,400 lb. The locomotive weighs 514,800 lb. on drivers and has a total engine weight of 639,800 lb. The combined weight of the engine and tender is 1,028,700 lb. The wheel base of the combined engine and tender is 111 ft. 9 in. The principal difference between this locomotive and the first ones of its type is the provision of one-piece cast-steel bed with integral cylinders for both the front and back engines.

Pennsylvania 4-4-0 Type Locomotive, No. 1223

For purposes of comparison with the latest Pennsylvania streamline type K-4 locomotive, the Pennsylvania exhibit also includes a 4-4-0 type locomotive, No. 1223, which was built at the Juniata shops in November, 1905, and represented at that time the last word in passenger locomotive design. The locomotive has been newly painted, stencilled and striped and gives that impression of grace and well-balanced design made familiar by that type of early locomotive.

Cornell Dinner

"Cornell I yell" will ring out with its accustomed vigor and there'll be much singing about Cayuga's sparkling waters at the dinner of Cornell alumni in the Mandarin room of the Traymore Hotel at 7 p.m., Tuesday evening, June 22. All Cornell alumni are welcome and reservations may be made with A. F. Stuebing at the Traymore or at the United States Steel Corporation booth.

A. A. R. Public Relations Committee

(Continued from page 1004D14)

chairman of this committee, and it is composed of public relations officers of a number of individual lines and representatives of the committees on public relations of the eastern and western lines. Holcombe Parkes of the Norfolk & Western is Col. Henry's associate director of public relations, and has for some months been devoting most of his time to work for the A.A.R.

Registration, Mechanical Division—A. A. R.

Abrahart, H. R., M. M., C. M. St. P. & P., Haddon Hall
 Allstrand, H. P., Prin. Asst. S. M. P., L. & N. W., Dennis
 Anderson, R. W., C. S. M. P., C. M. St. P. & P., Claridge
 Attridge, O. H., M. M., Georgia, Knickerbocker
 Baker, Phil. M. M., Chicago Belt, Dennis
 Barclay, F. B., S. M. P., I. C., Ambassador
 Baxter, D. M., Ch. Draftsman, L. & N., Colton Manor
 Bell, R., Gen. M. M., I. C., Senator
 Bengier, F., Asst. Mech. Eng., C. P. R., Haddon Hall
 Bilty, C. H., Mech. Eng., C. M. St. P. & P., Brighton
 Bland, S. A., Secy. to S. M. P., N. & W., Marlborough
 Bowen, H. B., Chy. M. P. & R. S., C. P. R., Dennis
 Brophy, James M., Car Shop Supt., I. C., Shelburne
 Brown, M. F., Fuel Spvr., N. P., Haddon Hall
 Browning, A. C., Asst. to Secy., A. A. R., Claridge
 Bryant, C. T., G. F., C. & O., Haddon Hall
 Buffington, C. W., Gen. Master Boilermaker, C. & O., Haddon Hall
 Burchival, H. B., Gen. Pass. Agt., Penna.-Reading S. S. Lines
 Burnett, J. W., G. S. M. P. & M., U. P., Ambassador
 Buscher, W. F., G. M. M., M. St. P. & S. S. M., Ambassador
 Cannon, T. E., Ch. Equip. Insp., P. & W. Va., Dennis
 Cantley, Wm. I., M. E., L. V., Claridge
 Carter, E. J., C. C. to G. S. M. P., Chelsea
 Cartmill, Lloyd E., Genl. Supt. C. D., P. F. E., Traymore
 Carver, J. L., Mech. Eng., I. C., Shelburne
 Chambers, C. E., Rtd. S. M. P. Equip., C. R. R. of N. J., Dennis
 Coddington, H. W., Ch. Chem. & Test Eng., N. & W., Claridge
 Crook, C. R., Safety Insp., C. N. R., Ambassador
 Deverell, A. C., Ex. G. S. M. P., G. N., Marlborough
 Dohm, Philip, Adv. Dept. U. S. G., A. A. R., Embassy
 Draney, John, Engineman, D. L. & W., Flanders
 Ellis, D. S., Ch. Mech. Off., C. & O., Haddon Hall
 English, W. M., S. M. P., Monon, Traymore
 Endsley, Louis E., University of Pittsburgh, Chalfonte
 Flynn, Walter H., Genl. Supt. M. P. & R. S., N. Y. C., Marlborough
 Fuller, C. E., Ex. S. M. P., U. P., Marlborough
 Garber, O. A., Ch. Mech. Off., M. P., Traymore
 Gebhard, A. G., M. M., I. C., Marlborough
 Gorman, E. R., S. M. P. & M., C. St. P. M. & O., Shelburne
 Gorman, T. F., M. M., Erie, Ambassador
 Gray, Wm. E., Engr. Draft Gear Tests, A. A. R., Seaside
 Greig, William, A. A. R., Ansonian
 Hall, E. B., G. S. M. P. & M., C. & N. W., Dennis
 Hankins, F. W., Asst. V. P.-Ch. M. P., Pennsylvania, Dennis
 Hardin, F. H., Cons. Eng., N. Y. C., Claridge
 Hartley, W. D., Mech. Supt., A. T. & S. F., Marlborough
 Harrison, W. R., Supt. Shops, A. T. & S. F., Marlborough
 Hausbach, E. J., Shop Supt., Wabash, Ambassador
 Hawthorne, V. R., Secy.-Mech. Div., A. A. R., Claridge
 Hess, Geo. F., S. M. P., Wabash, Traymore
 Hicks, I. C., Mech. Supt., A. T. & S. F., Chalfonte
 Hitch, C. B., Asst. S. M. P., C. & O., Traymore
 Hogarth, Wm., M. C. B., Cudahy Car Lines, Brighton
 Hoppe, A. G., Asst. Mech. Eng., C. M. St. P. & P., Dennis
 Ing, A. M., Sec. to Ch. Mech. Off., M. P. Lines, Marlborough-Blenheim
 Kirkby, T. M., S. M. P. & E., G. B. & W., Ambassador
 Kleine, R. L., Asst. Ch. of M. P. Car., Penna., Dennis
 Koelin, Walter H., Jr., Advertising Asst., A. A. R., Ambassador
 Kyle, John, G. S. M. P. & C. Equip., C. N. R., Ritz-Carlton
 Lyles, M. L., Asst. to Pres., A. T. & S. F., Dennis
 Marshall, F. O., Asst. Ch. Eng., The Pullman Co., Shelburne
 Matschke, Charles, Adv. Dept., U. S. G., A. A. R., Embassy
 Maulbetsch, John L., Research Eng., A. A. R., Chalfonte
 Mays, F. R., G. S. M. P., I. C., Traymore
 May, H. E., Gen. Loco. & Blr. Insp., I. C., Marlborough
 McCormick, George, G. S. M. P., S. F., Chelsea
 McCoff, J. H., Mech. Supt., A. T. & S. F., Haddon Hall
 McKee, R. G., M. M., C. & O., Ambassador
 McLaury, H. F., A. A. R., Ambassador
 McQuillen, J. E., Mech. Supt., A. T. & S. F., Chalfonte
 Middleton, W. B., M. M., A. C. L., Haddon Hall
 Miller, W. J., S. M. P., St. L. S. W., Traymore
 Moore, Wm., M. M., Erie, Marlborough-Blenheim
 Moseley, W. S., Mech. Eng., Clinchfield, Claridge
 Mullen, P. L., M. M., C. M. St. P. & P., Chalfonte
 Murphy, Jas. S., Dist. Pass. Agt., Penna.
 Murray, E. A., Shop Supt., C. & O., Marlborough-Blenheim
 Murray, F. H., Div. M. M., Erie, Arlington
 Needham, H. L., M. M., I. C., Marlborough
 Norton, C. H., M. M., Erie, Arlington
 Parkes, Holcombe, Assoc. Dir. of Public Relations, A. A. R., Traymore
 Patterson, W. J., I. C. C., Marlborough
 Power, J. A., S. M. P. & E. S. P., Marlborough
 Pownall, Wm. A., Asst. to S. M. P., Wabash, Traymore
 Prendergast, J. J., Mech. Supt., T. & P., Claridge
 Purcell, John, Asst. to V. P., A. T. & S. F., Marlborough
 Reddix, T. B., M. M., Wabash, Ambassador
 Rake, H., Loco. Fore., C. N. R., Knickerbocker
 Ralston, A. L., G. M. S., N. Y. N. H. & H., Claridge
 Rawlings, C. H., Gen. A. B. Insp., D. & R. G. W., Haddon Hall
 Ripley, C. T., Ch. Mech. Eng., A. T. & S. F., Marlborough
 Robinson, Lee, Asst. to G. S. M. P., I. C., Shelburne
 Seely, H. N., M. M., I. C., Raleigh
 Shaffer, C. A., Genl. Supvr. Shop Machy. & Tools, I. C., Colton Manor
 Sheehan, D. J., S. M. P., C. & E. I., Marlborough
 Sheffield, Dale C., Spec. Rep. to S. M. P., C. M. St. P. & P., Chelsea
 Sheridan, T. F., Asst. to Supt., M. P. & R. S., P. & L. E., Claridge
 Smith, R. A., Leading Draftsman, C. P. R., Haddon Hall
 Spangler, P. F., Asst. S. M. P., St. L.-S. F., Chalfonte
 Stremmel, F. H., Asst. to Secy., Mech. Div., A. A. R., Claridge
 Trout, W. L., G. M. M., M. & St. L., Dennis
 Von Bergen, E., Gen. A. B. Eng., I. C., Ambassador
 Wahlén, John, Mech. Supt., Mont. & Wells River, Arlington
 Walker, A. R., Elec. Eng. Equip., I. C., Shelburne
 Wall, H. S., Mech. Supt., A. F. S. F., Traymore
 Wallace, L. W., Dir. Div. of Equip. Research, A. A. R., Chalfonte
 Walsh, F. O., S. M. P., A. & W. P. and Ga., Claridge
 Wegmiller, E. G., G. F., C. & E. I., Marlborough-Blenheim
 Wilson, C. L., M. M., E. I. E., Marlborough
 Withrow, P. C., Asst. Ch. Mech. Off., D. R. G. W., Traymore
 Zwright, Silas, Ex. Gen. Mech. Supt., S. P., Traymore

Conventionalities . . .

To settle all arguments, each stripe on the gigantic American flag in the balcony of the exhibition hall is exactly 12 ft. high.

Our statistical expert reports, this year, the exhibits are so numerous that, if laid end to end, they would extend from Atlantic City to Pehonkus, N. J.

Flowers for madame—and for monsieur, too—are very much in evidence in the exhibit hall this year. Our sound expert informs us that the decibels of profanity have been materially lessened, as a result of the aesthetic surroundings.

Ohayo gozaimasu—that may seem a queer way of saying “good morning,” but not to Fritz Ernst, vice-president, American Steel Foundries. That’s the way the Japanese say it, and Mr. Ernst has only recently returned from an extensive trip through Japan and China.

E. E. Lloyd, of Davis & Lloyd, London representatives of the Baldwin Locomotive Works, American Steel Foundries and other American firms, arrived on the Aquitania Tuesday, in order to be present at the opening of the Atlantic City conventions.

J. E. McQuillen, mechanical superintendent, C&F, Colorado & Santa Fe, may be boss around the shops and up and down the railway, but it’s different at home and in Atlantic City. In registering, Mrs. McQuillen proudly entered her title as “Boss.”

The Superheater booth has two new faces, who have appeared here hitherto in different uniforms—B. C. Wilkerson, chief service engineer, formerly with the Bradford Corporation, and Maurice O’Sullivan (no relation to Maureen O’Sullivan of Targan fame) who was with Franklin Railway Supply Company.

Charles E. Fuller, formerly superintendent of motive power of the Union Pacific, and Mrs. Fuller are here for the conventions. Since his retirement, Mr. and Mrs. Fuller have kept their home in Omaha, but have spent much of their time in traveling extensively in this country and in Europe and South America.

That faint aroma of old Spain that hangs about the American Steel Foundries booth is caused by Charlie Heeter and Bob McKisson. The latter has recently been to Mexico, and the former, during the course of a visit to Guatemala a month or two ago, is reliably reported to have visited a place with the highly unlikely name of Santo Tomaso de Chichicastenango.

Bert Downs, advertising manager, American Locomotive Company, has read every word of the book “How to Swing.” Please don’t misunderstand, Bert is not trying to replace any of the famous bandleaders in modern music. The book deals with golf, and he has been practicing so assiduously at home that, during his absence at the convention, the chandelier manufacturers will have an opportunity for catching up on back orders replacing smashed lighting fixtures in the Downs mansion.

A. A. Helwig, recently elected vice-president of the Standard Railway Equipment Company, has the remarkable record of never having seen the Statue of Liberty. Not only has Mr. Helwig been to New York several times a year for the past

several years, but he has also made two trips to Europe from New York, one on a troop ship with the First Army Engineers. That time all portholes were closed and the second time the sailing was at night.

Influenced perhaps by the Hollywood diet that was sweeping the country at the time, W. T. Bennison turned from designing electric locomotives for the Virginian, the heaviest in the country, to developing stainless steel trains, the lightest in the country, for the Edward G. Budd Manufacturing Company. He is paying his first visit to the convention as a supply man, like his co-worker, who bears a name famous in railway history, Samuel M. Felton, now with the rail car sales division of the Budd company.

When a man catches a fish it isn’t news, unless he’s landed a sea serpent or whale. But when a man doesn’t catch fish and that man happens to be Bill Wine, it’s news indeed, for Bill is one of the country’s outstanding manipulators of a Leonard rod in landing the wily trout. Let us hasten to add, however, that the reason Bill hasn’t caught many this year is due to no diminution in the skill of his flexible wrist. Rather it’s been because he’s been too busy filling railway orders to go fishing.

Twin Drum Majors

In the Hartman family, it’s a case of like father, like son. The twin sons of Fred B. Hartman, southeastern representative, Hunt-Spiller Manufacturing Company, have been appointed twin drum majors of the Purdue University freshman band. Fred himself can still wield a mean baton, an art he learned in the old days when he was an intimate friend of “Buffalo Bill” Cody.

Frank Barbey III

J. W. Motherwell of the Ashton Valve Company, reports that Frank Barbey is quite ill in the Wyman House, Cambridge (Mass.) Hospital. He was sitting up when Joe stopped in to see him on Monday morning and asked to be remembered to any of his friends at Atlantic City. This is the first convention Frank has missed since 1890. If he were here tomorrow he would remind us that June 17 is Bunker Hill Day.

A Good Teamworker

Tom O’Brien, sales manager for the O. M. Edwards Company, Inc., when he was an employee of the Pullman Company at Buffalo was extremely active in organizing teams and playing baseball. Possibly the knowledge of organization acquired at that time is responsible for his having been assigned during the past two years the extremely difficult task of seating the members at the big annual dinner of the New York Railroad Club—and he has made a mighty good job of it!

Patterson’s Daughter Graduates

Jane Patterson, daughter of W. J. Patterson, director, bureau of safety, Interstate Commerce Commission, is graduating from the University of Wisconsin next week, having majored in journalism, served as desk editor of the college daily paper for three years and won the honor of being the outstanding woman in the graduating class in athletics. Mr. Patterson is leaving the convention on Thursday for a business trip West which will include attendance at the graduating exercises of his talented daughter.

Almost a Hole-In-One

Vic Ellet, the new president of the Hunt-Spiller Manufacturing Corporation, recently came within 4½ in. of making a hole-in-one at the Brae Burn Country Club in Newton (Mass.). The feat is attested to by no less a personage than Denny Shute,

former national open champion, with whom Vic was playing at the time. Incidentally, he was slightly delayed in getting to the convention by reason of attending the graduation exercises of his daughter, Esther, from Colby Junior College at New London, N. H. Miss Esther, an only child, has recently announced her engagement.

Visitor from Buenos Aires

Ormond Steven, chief operating officer of the Buenos Aires Great Southern and Western Railways, with headquarters in Buenos Aires, Argentina, will visit Atlantic City and the exhibit Saturday, June 19. He will be accompanied by Mrs. Steven and his two sons, Ormond J. and Horace. This is their first visit to the United States and they are en route to England, sailing on the Queen Mary, June 23. During their short visit in Atlantic City they will be the guests of Robert A. Carr, vice-president, Dearborn Chemical Company, who formerly lived in Buenos Aires.

Visitor From China

The long distance visitor this year is S. Baer, consulting mechanical engineer, of Shanghai, China. Mr. Baer was formerly with the German railways, but has been stationed in China for the past few years, intimately concerned with railway affairs there. He states that, so far as railway construction is concerned, China is in a period of expansion, corresponding to the 70's and 80's of the past century, in this country. He states, too, that China's railway mechanical engineers, nearly all of them educated in this country, are beginning to comprise an efficient technical body.

German Railways Represented

Felix B. Schwing, Reichsbahndirektor from the executive offices of the Central Administration of the German National Railways, is attending the Mechanical Division convention as an invited guest representing the mechanical engineering department of the German National Railways. Mr. Schwing is not new to the United States. From the fall of 1926 to the end of 1928 he was attached to the executive offices of the Pennsylvania Railroad for the purpose of studying American railway management and operating methods. One of the matters in which he is specially interested is wheel service under high-speed trains, the difficulties with which, he says, are no more acute in America than in Europe.

A Good Job

Members and guests of the convention only just missed the smell of formaldehyde, and having to clutch their tonsils and gall-bladders to prevent their removal. The American Medical Association had its annual convention and exhibit in the Auditorium last week, and the sawbones stayed over so long that the R.S.M.A. people began to fear that their devices would have to be shown among the latest carving knives for neat appendectomies. In fact, it was not until Friday night that they cleared out, leaving the shortest time on record for getting in the railway exhibits. However, the railways and the Railway Express Agency came through in splendid style in delivering the material, and all the above-mentioned possibilities were avoided.

Watch Out!

A watch that does everything—even to entertaining customers—is the proud possession of Edward G. Budd, president, Edward G. Budd Manufacturing Company. Among other things this remarkable timepiece does is to compute miles per hour automatically, and it has been much used for this purpose on the test runs of the stainless steel trains. Mr. Budd is again an attendant at the railway conventions and exhibit after many years of activity in another transportation field. Prior to the organization of the Edward G. Budd Manufacturing Company in 1912, he had spent a number of years with Hale & Kilburn, where he developed the use of pressed-steel parts for passenger car

seats and steel trim to replace castings. After many years of activity in developing the all-welded pressed-steel automobile body, Mr. Budd's company returned to the railway field.

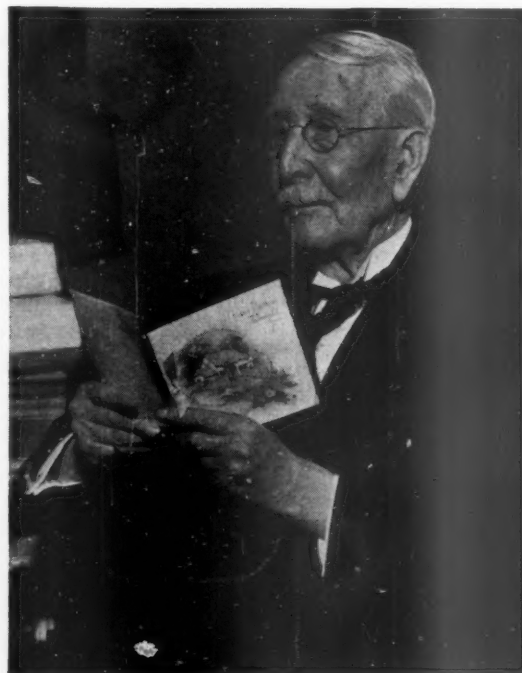
Joe Buker's Friends

The display of photographs in a large and attractively furnished private office in the Railway Exchange, Chicago, is worth going miles to see. The office is that of Joseph E. Buker, vice-president of the Vapor Car Heating Company, Chicago, one-time (1906) president of the Master Car Builders' Association. The four walls of Mr. Buker's office are so completely filled by the photographs that the frames touch each other from ceiling to baseboard. There are 420 photographs in this remarkable collection, probably the largest of its kind, and Mr. Buker has in his hotel-home over 200 more similar pictures, his office wall space having become exhausted. The photographs are all excellent likenesses of prominent railway and railway supply and equipment men of the past quarter of a century. Now and then are photographs of groups of railway and supply men taken at the conventions and showing familiar backgrounds of buildings, scenery or "what have you."

Squads East

There are many ex-service men present at the convention, but Col. E. J. W. Ragsdale, chief engineer of the stainless steel division of the Edward G. Budd Manufacturing Company, is undoubtedly the only one who served both with the British army in the Boxer rebellion in China and with the American forces during the World War. Born in the United States, he was educated here, in China and in Germany. His proudest boast is that he has ridden more special trains with more chambers of commerce than any other man in the country these past three years. Modesty forbids his mention of his other achievements, but it might be stated that he is the inventor of the Shotwell process, as well as holding numerous other patents for ammunition, automobile equipment, aircraft and lightweight structures. Among other things, he organized the trench warfare division of the ordnance department and started what later developed into the chemical warfare service. Oh, yes, he also introduced four-wheel brakes for automobiles.

* * *



J. J. Hennessey on his ninetieth birthday, March 5, 1937. Mr. Hennessey is Chairman of the Nominating Committee of the Mechanical Division



The Vast Atlantic City Municipal Auditorium Faces the Boardwalk and Ocean

A Record of Real Achievement

A PPLIED to detailed improvements along industrial lines in this mass production era seven years is a long time. There is an impression that the depression through which we have passed slowed down the making of improvements, but anyone who has given critical study to what has been happening in the mechanical departments of the railroads must realize that this is not a fact. It would almost seem as if the depression was a spur to the railway supply manufacturers and to railroaders themselves, to speed up research and development work. This is clearly evident when the exhibit this year is compared with that of 1930. If one considers only the matter of improved materials, for instance, the progress is rather astounding, and as these materials become more generally applied, corresponding improvements will be made in operating efficiency and reduction of maintenance costs. The same thing is true in regard to improvements in design and construction of equipment and mechanical-department facilities.

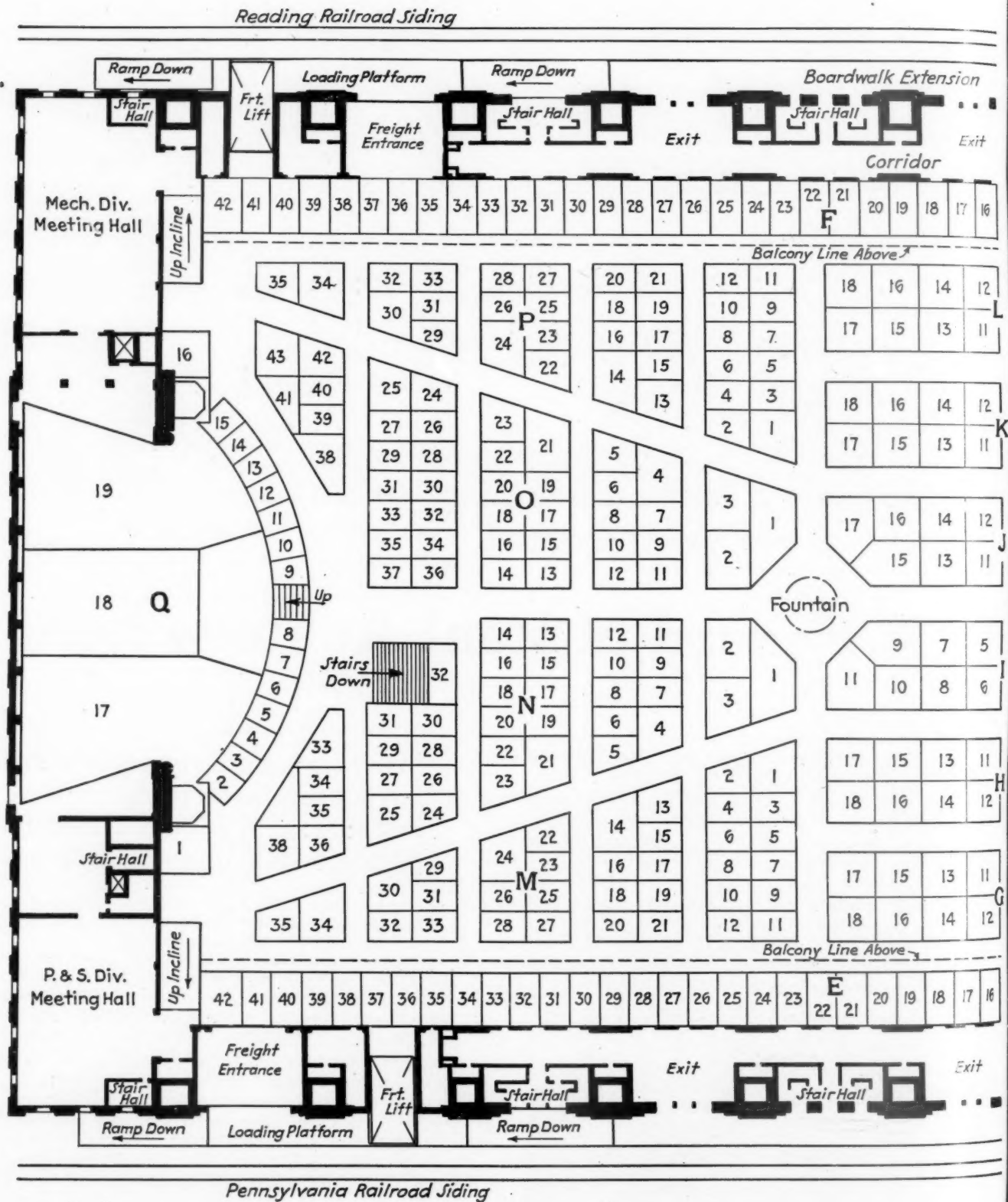
For Bigger and Better Business

Looking at the problem in a broad way, these improvements, some of which have been quite startling, will do much to make it possible for the railroads to compete more successfully with other types of common carriers. In the first place, the improvements promise to have a large influence on increasing passenger traffic, because of added conveniences and facilities which have been af-

Many marked improvements have been made in mechanical department equipment and facilities since the last exhibit was held in 1930

forded to the traveling public, and also in increasing freight traffic, because of the improved and more satisfactory service which can be rendered. In the second place, the improvements promise to have a profound effect upon operating efficiency, because of the speeding up of traffic and the savings which will be made in operating the new and, in many instances, much lighter equipment. In the third place, better materials and improved methods of construction, coupled with greatly improved tools and facilities, promise to greatly reduce maintenance costs. For these reasons the exhibit, which has been arranged largely from an educational viewpoint, should be critically studied by all railroaders.

This year there are 278 exhibits. This is not quite as large as the number in 1930, but there is no question but that the exhibit is quite as comprehensive and extensive and that, from the standpoint of demonstrating



Location of Meeting Rooms and Arrangement of Exh

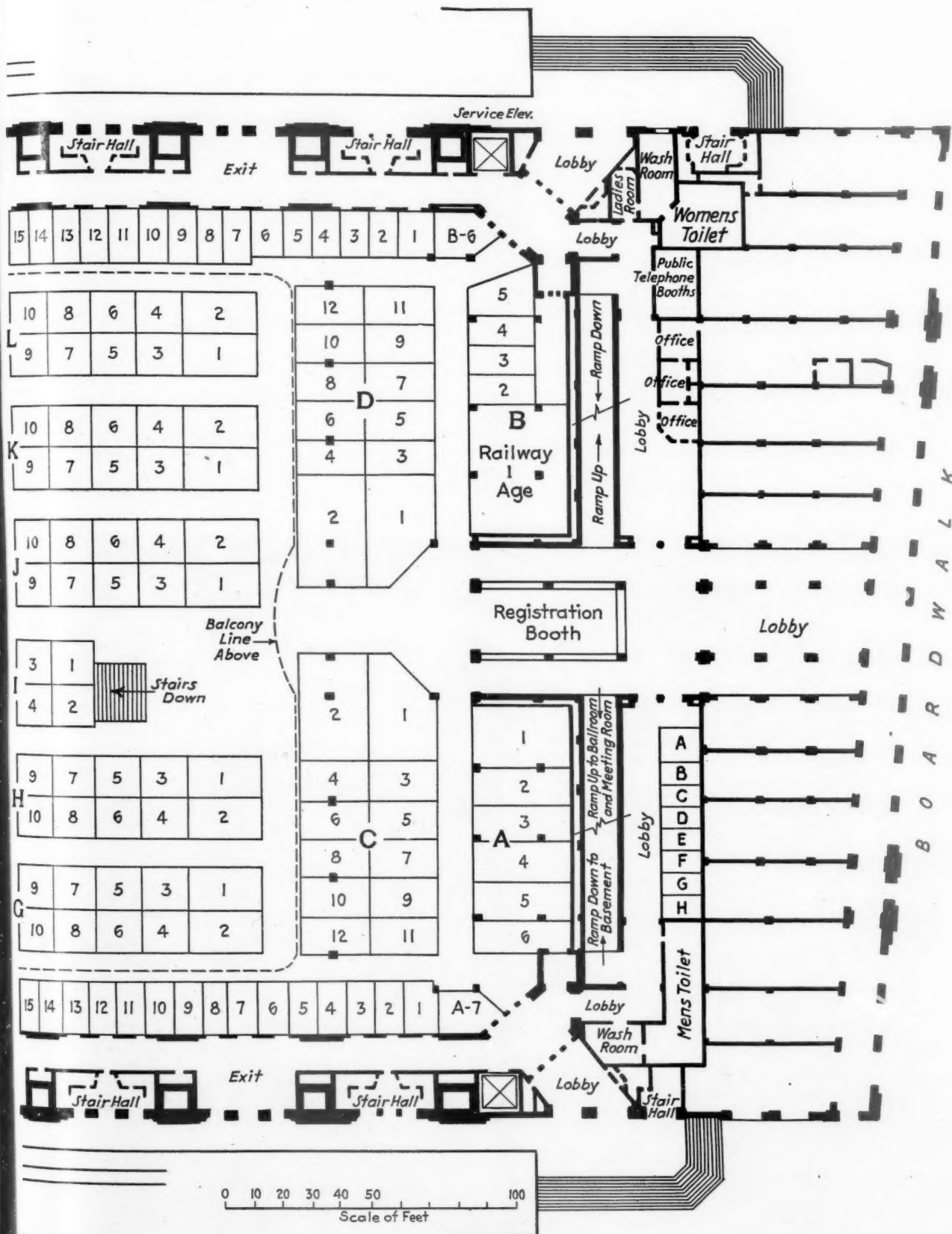


Exhibit Spaces on Main Floor of the Auditorium

the advance in the state of the art, it marks the high spot of all exhibits held under the direction of the Railway Supply Manufacturers' Association.

There are, of course, good reasons why there are not quite as many exhibitors as in 1930. Some companies which were then in existence have gone out of business or have consolidated with other organizations. On the other hand, there are of course a number of new exhibitors who were not in existence, or were not interested in the railway business in 1930. It is a remarkable tribute to the Railway Supply Manufacturers' Association that so many of these new companies have recognized the value of the work of the Association and the special opportunity for demonstrating their products at Atlantic City.

Unusual Track Exhibit

The high spot in the exhibit this year is the track exhibit which is located at the new Union Station of the Pennsylvania-Reading Seashore Lines, only a comparatively short distance from the Auditorium. Here will be seen some of the very latest new designs of cars and locomotives. The locomotive track exhibit is described more fully in a separate article in this issue, and the car track exhibit will be covered in an article in next Monday morning's *Daily*.

The exhibitors will have an excellent opportunity on Saturday and Sunday of assisting in encouraging the general public to have a keener appreciation of the re-

markable progress which is being made by the railroads. Railroaders have been amazed during recent years to find the keen interest that a large part of the public was taking in new equipment. As a matter of fact, railroaders today are appreciating that this interest can be made the basis of bringing about more cordial and improved relations with the public.

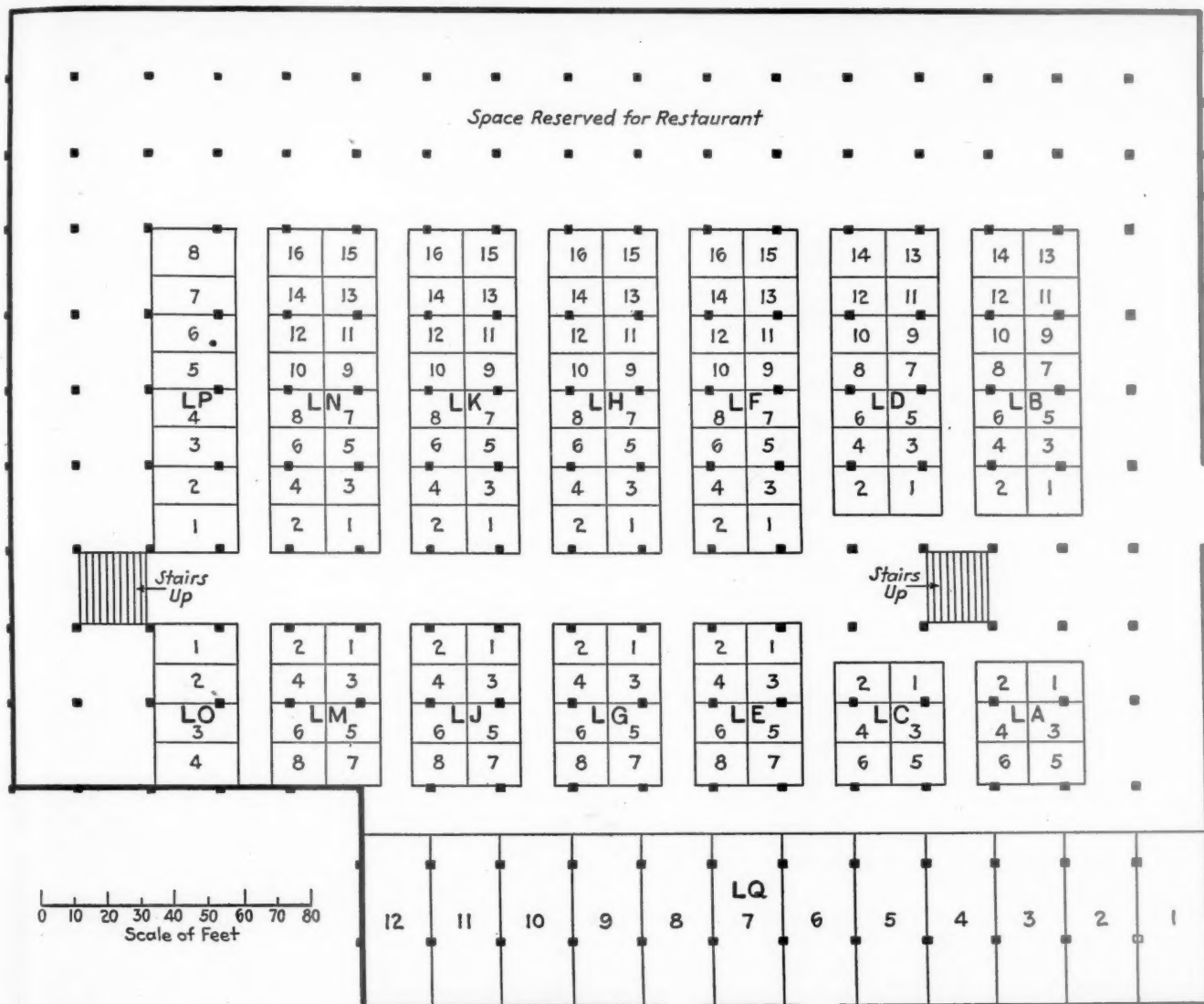
The Department of Public Relations of the Association of American Railroads, realizing this asset, has arranged with the R.S.M.A. to open the exhibit to the general public on Saturday and Sunday, admission being by the showing of a return railroad ticket. Excursion trains will be run to Atlantic City from various points, some of them quite remote. The railway supply interests have a distinct stake in thus assisting to improve relations between the public and the railroads, since it will undoubtedly mean additional traffic for the railroads, which in turn will require purchases of supplies and equipment from the manufacturers.

Hard Job for Exhibit Committee

The problem of setting up the exhibit this year was complicated by the fact that the American Medical Association held its meeting in the Auditorium last week and did not close its sessions until Friday night. The exhibit held in connection with this convention had to be removed, so that nothing could be done in installing the railway exhibits until Saturday. When one recalls the long period of time required for the preparation of our



Main Exhibit Hall in the Municipal Auditorium



Arrangement of Exhibit Spaces on Lower Floor of the Auditorium

exhibits in the past, the fact that this exhibit with its relatively heavy and bulky materials was put together in so few days, is little less than remarkable.

The Exhibit Committee is headed by N. C. Naylor, American Locomotive Company, Chicago. The other members are C. W. Floyd Coffin, Franklin Railway Supply Company, Inc., New York; George L. Gordon, Lukens Steel Company, Coatesville, Pa.; Webb G. Krauser, Canadian Cardwell Company, Ltd., Montreal, Que., and W. E. Wine, The Wine Railway Appliance Company, Toledo, Ohio. Vice-President Eubank, because of his familiarity with the track exhibits, was drafted to take over the responsibility of arranging for it.

The space numbering is quite different this year from that of previous years. The Auditorium has been divided into sections, which are indicated by prominently displayed letters of the alphabet, and the spaces have been numbered serially within each one of these sections. All of the spaces downstairs are preceded by the letter L.

The list of exhibitors, with the products which they are showing and the names of representatives in attendance follow:

Adams & Westlake Company, The, Elkhart, Ind.—Window sash; curtains; diaphragms; vestibule curtains and rollers; electric lighting fixtures; car hardware; miscellaneous fittings. Represented by A. S. Anderson, R. D. John, H. Seip, M. W. Hollingsworth, W. T. Brassil,

R. Brown, W. G. Porter, E. E. Whitmore and E. H. Leisch. Spaces E-23 and 24.

Adanac Supplies, Ltd., Montreal, Que.—See The Symington-Gould Corporation. Space C-1.

Air Reduction Sales Company, New York.—Airco oxygen and acetylene; Airco-DB welding and cutting apparatus; demonstration of Airco-DB No. 10 Travograph for oxyacetylene cutting steel plate and slabs, and No. 6-A Oxygraph for oxyacetylene cutting straight lines, circles and irregular patterns from rolled steel plate and slabs, forgings and billets; demonstration of flame hardening of rail ends and gears, and also of rail cropping with the Airco-DB No. 4 Radiograph; demonstration of Airco-DB No. 1 Tractograph, cutting steel plates and slabs into shapes having straight, circular or irregular outlines; demonstration of Metal-Layer to show the application of metal to hard wearing surfaces; demonstration of hard facing with Stoddy products; Airco brazing of Walseal fittings; Wilson electric arc welding machines; National carbide and carbide lights; Pureco carbonic gas; Dry-Ice. Represented by A. R. Ludlow, C. D'W. Gibson, C. B. Armstrong, A. W. Brown, D. J. Williams, H. F. Henriques, J. J. Lincoln, J. M. Driscoll, J. T. Gillespie, Jr., R. T. Peabody, J. W. Kenefic, H. A. Hocking, G. Van Alstyne, E. F. Pettigrew, H. L. Rogers, H. W. Reade, E. C. Ackerman, R. Galloway, R. S. Moore, J. F. Callahan, R. F. Helmkamp, A. H. Yoch, L. Ames, G. A. Williams, W. W. Barnes, C. Holt, S. Martin and W. P. Roberts. Spaces LP-1, 2, 3, 4, 5, 6, 7 and 8 and N-4.

Ajax Hand Brake Company, Chicago.—Ajax hand brake. Represented by G. N. DeGuire, Thomas W. Delanty and R. E. Lave. Spaces P-16 and 17.

Aluminum Company of America, Pittsburgh, Pa.—Alcoa aluminum alloys and aluminum products applicable to railroad rolling stock construction; a modulus of elasticity demonstrator; welding demonstrations; aluminum alloy products, including locomotive side rods. Track exhibit: All-aluminum hopper car operated by B. & O.; aluminum passenger car truck; aluminum tank car. Represented by J. O. Chesley, A. H. Woollen and F. L. Gemmer. Space Q-18 (Stage).

American Arch Company, Inc., New York.—Security locomotive arch brick; Security circulator; suspended arches and walls for boiler plants, furnaces, etc. Represented by B. A. Clements, George A. Price, J. D. Brandon, S. MacClurkan, J. P. Neff, A. H. Willett, A. F. Becker, Thomas Mahar, G. M. Bean, T. M. Ferguson, William Haag, T. F.

Kilcoyne, E. T. Mulcahy, W. E. Salisbury, M. R. Smith and A. M. Succese. Spaces I-6 and 8.

American Brake Shoe & Foundry Company, The, New York.—Brake shoes; "Lockeys"; armored concrete. Represented by M. N. Trainer, F. P. Biggs, R. O. Polsdorfer, T. S. L. Seaman, R. E. Holt, E. Johnson, Jr., G. E. Anne, H. W. Hurst, W. Minto, E. W. Eichhorn, J. T. Talbot, R. D. Jenks, R. E. Thomas, S. S. Conway, R. L. Robinson, C. F. Weil, J. W. Waters, E. L. Janes, R. B. Pogue, H. C. Irvin, R. Wilson and U. B. Grannis. Spaces C-5, 6, 7 and 8.

American Bridge Company, Pittsburgh, Pa.—For exhibit see United States Steel Corporation Subsidiaries. Spaces Q-4 and 17 (Stage).

American Car & Foundry Company, New York.—a.c.f. Berwick electric rivet heaters; a.c.f. metal and forging heaters; tank car outlet valves. Track exhibit: C. & O. 50-ton light-weight hopper car; C. & O. a.c.f. 70-ton covered hopper car; a.c.f. 40-ton, 8,000-gal. aluminum tank car built for Carbide & Carbon Chemical Corporation. Represented by G. J. Hardy, H. W. Wolff, W. E. Hedgcock, W. L. Richeson, R. I. Dunphy, A. E. Ostrander, A. H. Hudson, M. C. Shands, J. M. Keller, F. C. Cheston, V. R. Willoughby, L. W. Martin, F. H. B. Fowler, R. J. Smith and A. Spiers. Spaces M-1 and 3 and LK 5 and 7.

American Locomotive Company, New York.—Type "K" reverse gear; Diesel parts; forgings; Flexitite casing; lateral cushioning device; four-wheel engine truck; Alco slideguide; handrail column; pipe clamps; throttle rod support; weldless boiler brace; journal box lid; Universal spring plate. Track exhibit: Union Pacific 4-6-6-4 locomotive; 600 hp. Diesel locomotive. Represented by W. C. Dickerman, J. B. Ennis, D. W. Fraser, F. J. Foley, J. Partington, A. W. Bruce, J. G. McGillis, N. Naylor, W. C. Corrigan, L. Peabody, W. S. Morris, W. A. Callison, A. Lipitz, J. G. Blunt, W. G. Lockwood, J. H. Link, C. L. Reinhart, C. C. Dennis, J. Morrison, J. M. Howard, J. C. Davidson, T. R. Weber, W. O. Vane, J. Kindervater, B. C. Woody, R. H. White, E. Duchesne, S. Miller, D. W. Davis, H. C. Pentecost, H. J. Downes, C. Bell, M. O. Smyth, A. M. Hamilton, H. Long, R. T. Sawyer, P. T. Egbert, E. H. Dickenson, K. Auburn, R. Brown, G. G. Jones, E. J. Edwards, G. P. Robinson, W. Farrell, W. H. Clark, C. H. Apps, O. Gruenberg, T. M. Murphy. Spaces J-13, 14, 15, 16 and 17.

American Radiator Company, New York.—Arco full flow wrought copper fittings. Represented by George Hench. Space LN-10.

American Steel Foundries, Chicago.—Simplex 40-ton freight car truck; 50-ton self-aligning spring plankless freight car truck; integral box side frames; roller bearing units; freight and passenger couplers and cast steel coupler yokes; Davis steel wheels, brake beams and clasp brake parts; hardened and ground steel pins and bushings; miscellaneous steel castings. Represented by W. H. Baselt, F. H. Bassett, R. B. Cottrell, W. C. Doering, F. B. Ernst, C. E. Grigsby, C. L. Heater, J. J. Higgins, L. E. Jones, W. J. Lynch, A. W. MacLaren, R. W. McKisson, F. S. McNamara, A. H. Oelkers, A. H. Peycke, C. B. Peirce, S. W. Sargent, T. R. Sadler, G. E. Scott, G. F. Slaughter, R. Sonquist, G. H. Snyder, W. S. Spieth, W. A. Stearns, W. C. Taylor, A. G. Williams, A. Withall and J. E. Wright. Spaces H-1, 2, 3, 4, 5 and 6.

American Steel & Wire Company, Cleveland, Ohio.—For exhibit see United States Steel Corporation Subsidiaries. Spaces Q-4 and 17 (Stage).

American Throttle Company, Inc., New York.—See The Superheater Company. Spaces J-9, 10, 11 and 12.

Anchor Packing Company, The, Philadelphia, Pa.—Asbestos, fibre and metal packings; throttle and air pump packing; gaskets; pump valves; mechanical rubber goods; brake lining. Represented by D. M. Allan and Claude McCulley. Space F-13.

Apex Tool & Cutter Company, Inc., The, Shelton, Conn.—Apex inserted forged tools; holders and tool bits for all shop work, including tools for roughing and finishing axles, tires, wheels, etc.; tool bits of high speed steel, Super Cobalt steel, Steelite "J" metal and tungsten carbides; boring tools for wheel centers with adjustable cleats; full contour flange and chamfering tools, from forged high speed steel; special tool post adaptation for axle work. Represented by F. J. Wilson, H. M. Sheridan and J. C. Kaimer. Space LE-7.

Arco Manufacturing Company, Hoboken, N. J.—Arco rail and flange lubricator; Sismo rail and flange lubricator; Arco automatic safety cylinder cock; Arco automatic drifting and balancing pressure valve; Arco automatic locomotive lubricating truck cellar. Represented by Charles Stern, J. J. Carlock and Thomas J. Crowley. Space O-8.

Armco Railroad Sales Company, Middletown, Ohio.—Full-sized Armco galvanized Paintgrip sheet, 30 by 72; large sheet, hot-rolled, pickled and oiled, high tensile steel (Armco H. T. 50); formed and welded sections of hot-rolled H. T. 50; wrought steel railroad wheels, 44-in. (1,800-lb.), 33 and 22-in. diameter; formed stainless steel ware, including Armco-Diamond tableware; three framed sheets, highly polished, stainless steel; model of a machine for quenching wheels. Track exhibit: New type bedroom car made from H.T. 50; box car made from H.T. 50; hopper car of Chromsteel; Pullman car with a cut-away section showing strength and rigidity of H.T. 50. Represented by L. T. Johnston, H. M. Arrick, W. B. Quail, W. A. Dibblee, E. C. Bray, W. N. Crout, Harry Holoday, E. Harbeck and R. L. Kenyon. Space A-4.

Ashton Valve Company, The, Cambridge, Boston, Mass.—Locomotive muffled and open pop safety valves; single and double illuminated dial, dustproof case, steam and air gages; illuminated dial Quadruplex air brake gages; quadruple dials for stoker and air gages; back pressure gages; wheel press recording gages and attachments for double wheel mounting; dead weight gage testers, test gages; locomotive driving wheel quaterning gages; relief valves. Represented by Charles Gaston, J. F. Gettrust, E. C. Kenyon, J. W. Motherwell and H. B. Nickerson. Space F-32.

Association of Manufacturers of Chilled Car Wheels, Chicago.—Chilled car wheels, including A.A.R. standard designs and a proposed bracketed design with cored hub, the latter being represented by a full-sized wheel with a segment cut out to show full section of flange, tread, rim, plate and hub; illuminated transparencies depicting research laboratory equipment; model of low heat capacity unit pit for cooling wheels through a pre-determined cycle. Represented by F. H. Hardin, F. K. Vial and S. C. Massari. Spaces G-1 and 2.

Automatic Transportation Company, Chicago.—Electric and gas-electric industrial trucks, tractors and cranes; material handling equipment for railroad shops, stores, maintenance and shipping. Represented by E. F. Twyman, R. L. Wolter, E. L. Bertram, Earle Mann, W. F. Weber, C. Lightner and R. Smith. Spaces LF-1, 3, 5, 7, 9 and 11.

Auto-Tite Joints Company, Pittsburgh, Pa.—Metallic steam heat connectors for passenger cars; metallic connectors between locomotive and tender; globe valve; roll or Flex flexible joints; roll or Flex high pressure flexible joints. Represented by A. M. Fraunheim. Space LF-10.

Badeker Manufacturing Company, Chicago.—Piston rod and valve stem packing. Represented by J. P. McKinley, E. Lee and Robert Sinkler. Space Q-11 (Stage).

Baker-Raulang Company, The—Baker Industrial Truck Division—Cleveland, Ohio.—New type CYA electric crane truck, capacity 3,000 lb. at 7 ft.; type E-5, 10,000 lb. capacity, low-lift elevating truck for skid handling. Represented by D. R. Darnell, H. B. Greig, Nat Platt, K. D. Tracy, P. W. Saitta, Nick Ennello and H. S. Peck. Spaces LC-4 and 6.

Baldwin Locomotive Works, The, Philadelphia, Pa.—Baldwin single disc driving wheels; Baldwin type T power reverse gear; Glaenzler throttle; Baldwin-Southwark oscillator. Track exhibit: 4-8-2 Boston & Maine passenger locomotive; 4-8-8-2 Southern Pacific freight locomotive. Represented by R. S. Binkerd, Stewart McNaughton, Philip Cole, A. S. Goble, J. F. Hoerner, Charles Riddell, C. G. Green, Victor Rennix and Henry Blanchard. Spaces D-2 and H-18.

Barco Manufacturing Company, Chicago.—Power reverse gears; low water alarms; flexible ball joints; metallic connections between locomotive and tender; metal car steam heat connections. Represented by F. N. Bard, C. L. Mellor, W. J. Behlke, C. O. Jenista, F. B. Nugent, J. L. McLain, W. T. Jones, C. C. Cox and N. B. Robbins. Spaces O-10 and 12.

Bendix-Westinghouse Automotive Air Brake Company, Pittsburgh, Pa.—Westinghouse automotive air brakes; air bearsift control; air clutch control; independent trailer control; air warning signals. Represented by R. L. Morrison, F. L. Hall, C. A. Ohl and A. R. Leukhardt. Spaces E-4 and 5.

Bethlehem Steel Company, Bethlehem, Pa.—Sections of side panel and skirting of passenger car made of Mayari R steel; center sill and carline of Mayari R steel; all-welded underframes for caboose car, box car and flat car; all-welded end door frame; body bolster; rolled and forged car wheels and forged steel axles; model of car wheel heat treating plant; alloy steels; pipe. Represented by G. W. Struble, J. E. Tesseman, A. K. Boot, R. L. Gillispie, G. F. Hocker, W. H. Statler, E. H. Gumbart, E. M. Jones, H. E. Stoll, G. H. Bentley, J. D. Tully, C. E. Simmons, L. M. Parsons, V. A. Jevon and J. W. Murphy. Spaces D-7, 8, 9, 10, 11 and 12.

Bettendorf Company, The, Bettendorf, Iowa.—Bettendorf self-aligning spring-plankless, double-truss truck; Bettendorf swing motion caboose car truck. Represented by E. J. Bettendorf, W. E. Bettendorf, C. J. W. Clasen, K. M. Hamilton, F. W. Lewis and A. B. Nilsen. Space L-1.

Bird-Archer Company, Ltd., The, Montreal, Que.—See The Bird-Archer Company, New York.

Bird-Archer Company, The, New York.—Boiler water treatment. Represented by Charles A. Bird, S. P. Foster, L. G. Calder and H. C. Harragin. Space LN-3.

Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa.—Castings; locomotive crosshead; superheater header; freight car body bolster; section of a locomotive piston and steam valve head. Represented by Russell A. Cannon, John E. McCauley, M. Post and M. H. Martin. Spaces F-24 and 26.

Black & Decker Manufacturing Company, The, Towson, Md.—Working demonstration of Universal and High Cycle portable electric tools and accessories for railway construction and maintenance. Represented by G. M. Buchanan, F. H. Schell, E. H. Federsmidt, George Herbst, Glen Treslar, G. F. Fischer, C. C. Watts and J. F. Spaulding. Spaces LN-2 and 4.

Brewster Company, Morris B., Chicago.—See T-Z Railway Equipment Company. Spaces N-30 and 31.

Buckeye Steel Castings Company, The, Columbus, Ohio.—Model of Buckeye retractable pilot coupler; models of Buckeye six-wheel tender truck and four-wheel self-aligning truck; Buckeye truck bolsters and side frames, high tensile steel and grade B steel; Buckeye draft attachments and freight car castings; A.A.R. standard and alternate standard type "E" couplers and draft yokes. Represented by F. H. Bonnet, J. G. Bower, F. J. Cooledege, M. M. Cooledege, M. R. Hansen, G. T. Johnson, J. C. Larsen, W. W. Matchner, H. A. Moeller, H. W. Stertzbach, G. A. Sutherland, A. H. Thomas and H. H. Wolfe. Spaces O-24, 25, 26, 27, 28 and 29.

Buda Company, The, Harvey, Ill.—Journal jacks; self-lowering jacks; ratchet jacks; automatic lowering jack; jack type rail bender; No. 120 motor car. Represented by R. B. Fisher and F. L. Gormley. Space N-23.

Budd Manufacturing Company, Edward G., Philadelphia, Pa.—Designs to demonstrate the safety and strength of stainless steel Shotweld construction, and the method of design and fabricating technique used in the construction of light-weight equipment; slides showing the development of railway cars in the plant from stainless steel strip to the finished car and the use of the Shotweld process; photographs and exhibits showing the finish and interior treatment of Budd-built cars; other displays to demonstrate the use of stainless steel in railway equipment; truck trailer in the Boardwalk exhibit. Represented by W. T. Bennison, Chester Buckland, Edward G. Budd, Edward G. Budd, Jr., H. A. Coward, A. H. Ehle, Samuel M. Felton, Jr., Henry Gebhart, T. H. Henkle, Sterling J. Joyner, Clarke P. Pond, Col. E. J. W. Ragsdale, C. H. Polf, W. Howe Sadler, Ernest Schmidt, Raymond Theriault, White, Marion J. Wise, Jr., Guy A. Mix and Paul Zins. Spaces O-38, 39, 40 and 41.

Buffalo Brake Beam Company, New York.—Unit truck; brake beams; brake beam parts; brake beam supports; bottom rod supports; master brake shoe keys; malleable iron castings. Represented by Lester A.

Crone, C. R. Busch, A. E. Crone, E. F. Gladwell, Alfred F. Crone, Edwin Strassburger and A. Gordon Jones. Spaces O-5 and 6.

Bullard Company, The, Bridgeport, Conn.—Bullard driving box borer and facer. Represented by E. C. Bullard, R. C. Bullard, J. W. Bray, E. P. Blanchard, Frank U. Hayes, Frank E. Hatch, Jr., and James L. Tillman. Spaces LN-5 and 7.

Burgess Battery Company, The (Acoustic Division), Chicago.—Burgess Multi-Vent ceiling for railway cars; Burgess Acousti-Pad; Burgess exhaust mufflers, silencers and air cleaners for Diesel and gas engines, compressors, etc.; Burgess Acousti-Vent architectural ceilings. On track: Chicago & North Western Railroad car completely equipped with new Burgess Multi-Vent ceiling in operation. Represented by Edward A. Sipp, Dudley Day and A. S. Chipley. Space K-12.

By-Products Steel Corporation, Coatesville, Pa.—See Lukens Steel Company. Spaces N-1, 2 and 3.

Camel Company, Chicago.—Youngstown all-steel freight car sides; Youngstown corrugated all-steel freight car side doors; Camel roller lift fixtures; Camel end door fixtures. Represented by W. A. Beauchamp, J. Buckley, H. E. Creer, F. Ditchfield, A. G. Dohm, L. F. Duffy, C. E. Eklind, E. J. Fehr, F. C. Heinen, J. P. McWilliams, E. E. Robbins, A. Singer, K. J. Tobin and C. H. Williamson. Spaces F-35, 36 and 37.

Canadian Cardwell Company, Ltd., Montreal, Que.—See Cardwell Westinghouse Company. Spaces K-3 and 4.

Cardwell Westinghouse Company, Chicago.—Freight and passenger car draft gears; freight and passenger car friction bolster springs. Represented by J. R. Cardwell, W. G. Krauser, J. E. Tarleton, C. J. Gorman, Wilber Eckels, O. C. Heckart, J. A. King, R. W. Schulze, P. B. McGinnis, J. M. Hall, C. A. Danielson, J. W. Bridge, H. E. Tucker, D. Sproul, A. Lerch, E. T. Evans and R. H. Owens. Spaces K-3 and 4.

Carnegie-Illinois Steel Corporation, Pittsburgh, Pa. — For exhibit see United States Steel Corporation Subsidiaries. Represented by C. V. McKaig, J. Halsey McKown, J. C. Dilworth, C. F. W. Rys, G. H. Baker, Samuel M. Clements, Jr., E. T. Barron, R. W. Steigerwalt, P. R. Shane, H. F. Knapp, Andrew Snow, Henry Stahl, J. A. Kalston, H. N. Priest, J. W. Hammerstrom, F. Oyen, C. B. Friday, N. M. Hench, J. J. Davis, Jr., H. B. McDonald, H. C. Jackman, F. W. Bendell, Grant Monk, P. K. Bowden, M. F. McConnell, E. K. Bauer, S. J. Cotsworth, R. J. Johnston, R. E. Maxwell, H. H. Wilt, J. H. Ainsworth, J. R. Mills, P. F. Voigt, Jr., Wm. Voigt, Jr., W. G. Somes, Paul Selby, J. C. Shields, C. R. Moffatt, J. R. Mills, R. Wayland Smith, J. W. Brush, J. W. Gabriel, F. H. Lehecka, J. L. Neubauer, H. C. Quasdorf, B. Bellamy. Spaces Q-4 and 17 (Stage).

Celotex Corporation, The, Chicago.—Celotex insulation for refrigerator cars, sound quieting and insulation for passenger cars, insulation for air conditioning, vaporproofed low temperature insulation for ice and cold storage plants, lightweight insulation for streamlined railroad equipment, insulation for lath, sheathing and interior finish for railroad buildings; Acousti Celotex for sound-quieting. Represented by J. H. Bracken and H. A. Winandy. Space LF-2.

Champion Brake Corporation, Chicago.—Champion Hand brake; Naylor pipe. Represented by E. E. Van Cleave, R. Bergendahl, R. K. Ashton, A. H. Purdom and J. V. McMullan. Space LE-8.

Chase & Company, L. C., New York.—Chase Velmo upholstery velvets; Goodall curtain and drapery material; Chase Redo and Chase Leatherwove; Chase Seamloc carpet. Represented by Eldon R. Campbell, H. T. Wight, B. W. Heberd, Jr., George B. Ogan, C. R. Warren, H. B. Willis, C. M. Gerhold, C. J. Dyer, C. A. Hillers and George E. Sawyer. Spaces F-1 and 2, and B-6.

Chicago-Hutchins Corporation, Chicago.—Car roofs; side door fixtures; metal floor plates; centering devices. Represented by D. R. Arnold, F. C. Comee, C. F. Pape, F. C. Dunham, J. T. Martyn, W. D. Thompson, E. H. Mattingley, E. R. Swanson and W. E. Bikle. Spaces N-6, 10 and 12.

Chicago Pneumatic Tool Company, New York.—CP speed recorder; pneumatic drills, reamers, tappers, nutrunners, screw drivers, chippers, scalers, riveters, busters, grinders, sanders and woodborers; electric drills, reamers, tappers, nutrunners, screw drivers, grinders, sanders and woodborers; Hicycle drills, reamers, tappers, nutrunners, screw drivers, grinders, sanders and woodborers. Represented by H. G. Barbee, T. P. Harris, P. J. Christy, S. A. Congdon, Jr., J. J. Brown, H. R. Deubel and W. Pallowick. Spaces N-19 and 21.

Chicago Railway Equipment Company, Chicago.—Creco and Drexel brake beams with new sleeve nut; Creco one-piece car door and two-way fixture; Creco supports for spring plank and spring plankless trucks; Creco and Drexel bottom rod guards; Universal heads and struts; Economy brake beam safety guards. Represented by A. C. Moore, G. N. Van Sweringen, F. R. Carlson, H. M. Van Sweringen, E. A. LeBeau, E. G. Busse, W. E. Watterm, R. J. Sheridan and L. H. Foster. Spaces F-16, 17 and 18.

Cincinnati Shaper Company, The, Cincinnati, Ohio.—Cincinnati all-steel squaring shear with accessories; brake press forming dies and samples. Represented by H. S. Robinson, George Diehl, F. P. Cavanaugh and A. G. Baumgartner. Spaces LN-1 and 3.

Clark Manufacturing Company, The, Bird Haven, Va.—Piston parters; bridge jacks; plate grips; pinch bars; slipping bars. Represented by William Bernard Clark. Space N-22.

Clark Tractor (Division of Clark Equipment Company), Battle Creek, Mich.—"Clarkat," small three-wheel platform tractor; "Clarktor-6," used in express and railroad terminal and shop service; Clark three-ton platform telescopic Tructier; Clark three-ton telescopic Tructier, finger tilting, equipped with interchangeable ram and forged steel fingers. Represented by H. B. Madison, Harry B. Clapp and Karl Pfistner. Spaces LE-1 and 3.

Cleveland Tanning Company, Cleveland, Ohio.—Seats upholstered in various types of leather; hides for exhibition purposes. Represented by F. R. Wilhelm, R. W. Freikschat, S. W. Midgley and Joseph Livingston. Spaces E-37 and 38.

Coach & Car Equipment Corporation, Chicago.—Railroad coach seats. Represented by Edward Buker, F. E. Van Hoesen and T. D. Owler. Spaces O-34 and 36.

Coffin, Jr., Company, The J. S., Englewood, N. J.—Units comprising the Coffin feedwater heater system, including new heater compartment as applied to a locomotive, new type D Coffin centrifugal pump, and working model of Coffin auxiliary heater, including new Coffin suction filter; units comprising Coffin tender type feedwater heater; locomotive superdraft. Represented by J. S. Coffin, Jr., W. J. Cornley, T. C. Browne, Paul Willis, C. D. Allen and E. L. Schellens. Spaces G-5 and 6.

Coffing Hoist Company, Danville, Ill.—Ratchet lever hoists; spur gear gravity lowering hoists; ratchet gravity lowering hoists; electric hoists; spur gear gravity lowering chain hoists. Represented by J. R. Coffing and E. J. Heinen. Space LM-7.

Collins & Aikman Corporation, New York.—"Locktite" angora velvet upholstery; wire loom Frises; mohair velvet upholsteries. Represented by Edward A. Smith and Edward L. Stites. Space D-3.

Columbia Steel Company, San Francisco, Cal.—For exhibit see United States Steel Corporation Subsidiaries. Represented by J. D. Fenstermacher. Spaces Q-4 and 17 (Stage).

Commerce Magazine, Chicago.—Space LH-10.

Consolidated Ashcroft Hancock Company, Inc., New York.—Hancock turbo-injector; Hancock inspirators; Hancock whistles; Hancock boiler check valves; Hancock globe and angle valves; Hancock hose strainers; Consolidated safety valves; Ashcroft American gages; Ashcroft American tank level indicators; American thermometers. Represented by C. H. Butterfield, C. L. Brown, H. Jude, W. J. Hall, W. H. Machie, H. G. Mastin, L. M. Pearsall and M. P. Van Woert. Spaces P-22 and 23.

Consolidated Machine Tool Corporation, Rochester, N. Y.—Betts hydraulic feed car wheel borer; Betts Bridgeford center drive axle lathe. Represented by H. M. Bowman. Spaces LG-1, 2, 3 and 4.

Continental Paint & Varnish Company, Chicago.—Reception booth. Represented by C. H. Broo. Space L-4.

Coppus Locomotive Equipment Company, Worcester, Mass.—Coppus Locomotive for drafting locomotives at terminals. Represented by F. H. Coppus and M. van Stappen. Space E-42.

Corley Company, The, Jersey City, N. J.—Corley A.A.R. "OK-tagonal" unions and combination union fittings. Represented by Ralph A. Corley and Charles H. Gayetty. Space K-7.

Crane Company, Chicago.—A.R.A. valves; A.R.A. pipe fittings, unions and union fittings; light-weight passenger car plumbing fixtures; light-weight welding fittings; locomotive blow-off valves. Represented by F. W. Venton, J. F. Lee, A. B. Stiles, A. B. Sohndrow and R. B. Scull. Spaces F-7, 8 and 9.

Crucible Steel Company of America, New York.—Reception booth. Represented by W. K. Krepps, J. H. Jones, A. E. Jones and W. M. Stevenson. Spaces M-22 and 23.

Cyclone Fence Company, Waukegan, Ill.—For exhibit see United States Steel Corporation Subsidiaries. Spaces Q-4 and 17 (Stage).

Dampney Company of America, The, Hyde Park, Mass.—Small glass boilers with horizontal and vertical Apexior coated and bare tubes in steaming operation; illuminated Translite enlargement showing interior of an Apexiorized railroad locomotive boiler shell after 3½ years' operation; samples of coated and uncoated locomotive boiler flues and shell plate. Represented by C. J. Hunter, Craig Heberton, J. D. Bird and L. W. MacLean. Space LM-5.

Davis Brake Beam Company, Johnstown, Pa.—Brake beams; brake beam supports; pressed steel journal box lids; bottom rod guards. Represented by E. J. Schmidt, E. K. Lofton and Craig Marshall. Spaces LE-2 N-24.

Dayton Rubber Manufacturing Company, The, Dayton, Ohio.—Dayton "D-R" V-belt axle drives; Dayton endless V-belt drives. Represented by E. J. Schmidt, E. K. Lofton and Craig Marshall. Spaces LE-2 and 4.

Dearborn Chemical Company, Chicago.—Dearborn water treating chemicals, chemical tanks, Cycloidal water motor, Type "R" chemical pump, Type "G" chemical pump, flow switch, pressure control switch, automatic constant blow-off system, and testing instruments and equipment; signal foam meter; typical applications of Dearborn No-Ox-Id chemically compounded rust preventives. Represented by Robert F. Carr, George R. Carr, Robert A. Carr, L. O. Gunderson, S. C. Johnson, R. Q. Milnes, J. A. Crenner, C. C. Rausch, F. J. Boatright, W. H. Hinsch and O. W. Carrick. Spaces O-1 and 2.

Detroit Lubricator Company, Detroit, Mich.—"Genuine Detroit" locomotive mechanical lubricators, Bullseye type lubricators, pendulum flange oilers, oil feed dividers and terminal checks. Represented by G. E. Cage, C. E. Sperry, E. F. Milbank and C. C. King. Space E-33.

Dick Company, A. B., Chicago.—New mimeograph 100 and latest developments in the mimeograph process for railroad applications. Represented by E. I. Foley and E. A. Carroll. Spaces M-25 and 27.

Differential Steel Car Company, The, Findlay, Ohio.—Space H, Lobby.

Downflow Syphon Company, Cleveland, Ohio.—Downflow syphons for locomotive fireboxes—working models. Represented by Lewis H. Smith. Spaces LK-9 and 11.

Dri-Steam Valve Sales Corporation, New York.—D.S.V. driers, 1930, 1935 and 1937 models; combined D.S.V. drier and dome throttle; front end throttle; locomotive auxiliary separator; pipe line separator; boiler drum separator; Dri-Steam angle and globe valves. Represented by A. DeChiara, P. Pascale, I. D. Toner, C. T. Schreiber and W. D. Scott. Spaces C and D, Lobby.

- Duff-Norton Manufacturing Company, The, Pittsburgh, Pa.—Complete line of lifting jacks, from 1 to 100 tons capacity; recent models of air motor-operated power jacks. Represented by C. N. Thulin, George C. Hutchinson, Jr., George L. Mayer, E. E. Thulin, David F. Evans, Albert Roberts, E. M. Webb and W. F. Floyd. Spaces L-7 and 9.
- Dunlop Tire & Rubber Corporation, Buffalo, N. Y.—Revolving and reclining two-passenger railroad seats; conventional walkover type railroad seats; engine cab seat; railroad lounge car chairs—all upholstered in "Dunlopillo" cushioning. Represented by A. B. Howe, C. E. Neumann, William Stumpf, Jr., A. M. Herrett and H. C. Hollinger. Space B-5.
- Durametallic Corporation, Kalamazoo, Mich.—Durametallic air pump packing, throttle packing; expansion joint packing, reverse gear packing, cab valve packing, and water glass packing; Dura Plastic packing; Dura Seal for centrifugal pumps; Dura hooks or packing pullers. Represented by Charles C. Hall, J. M. Jordan, Herbert Lewis and Jack McQuillen. Space K-9.
- Duryea Corporation, O. C., New York.—Duryea cushion underframe. Represented by O. C. Duryea, G. N. DeGuire, S. Simonson and J. Muller. Spaces P-19 and 21.
- Du-Wel Steel Products Company, Chicago.—Du-Wel freight car coupler centering device; Du-Wel Kant-lose pipe clamps; Du-Wel freight car roller side bearings, including the spring steel rubber base type; Du-Wel combination freight car coupler centering device with roller coupler and draft gear support. Represented by J. V. Wescott, R. W. Helbig and R. M. Mulvey. Space P-10.
- Eaton Manufacturing Company, Reliance Spring Washer Division, Massillon, Ohio.—Spring washers; Locomotive Hy-Crome used as bolt equipment on locomotives; Rib Hy-Crome for bolts and nuts on underframes and trucks of cars; Reliance Kantlink used with bolts and nuts in car construction. Represented by E. D. Cowlin, A. H. Weston and R. L. Shireman. Space LK-6.
- Edgewater Steel Company, Pittsburgh, Pa.—Rolled steel wheels; ring spring draft gears. Represented by F. B. Bell, J. H. Bailly, A. J. Couse, M. A. Carlton, W. M. Cree, Scott Donahue, L. H. Fry, W. J. George, J. W. Jordan, H. F. Lowman, D. W. McGeorge, T. E. Marston, J. H. Perry, Jr., C. H. Sherburne, E. A. Thornwell, H. J. Tierney and O. R. Wikander. Spaces P-29, 30 and 31.
- Edison, Incorporated, Thomas A., Storage Battery Division, West Orange, N. J.—Flashing semaphore; nickel-flake snowstorm; two-minute moving picture, entitled, "Protected Power on Parade." Represented by George E. Stringfellow, John S. Coakley, D. C. Wilson, G. J. Mertz, F. D. Van Lew, D. B. Mugan, J. S. Hagan and C. B. Archibald. Space A-3.
- Edna Brass Manufacturing Company, The, Cincinnati, Ohio.—Edna Universal lubricating system, automatic air pump lubricator, and flange oiler; Edna D & K automatic blow down system; Edna stop boiler check for feedwater and injector combination. Represented by E. O. Corey, D. B. Joseph, R. B. Buram, W. A. Deems, J. T. Ash, William Beck, W. E. Libby and E. F. O'Connor. Space M-21.
- Edson Corporation, The, Boston, Mass.—Edson diaphragm pumps, open discharge and force pump types; Edson pump accessories. Represented by A. B. Root, Jr., and L. O. Arringdale. Spaces O-15 and 16.
- Edwards Company, Inc., The O. M., Syracuse, N. Y.—Brass and extruded aluminum single and double sash; stainless steel sash with double glazed unit; combination vestibule trap door and folding step. Represented by O. M. Edwards, Harold Edwards, J. J. Edwards, E. F. Chaffee, T. P. O'Brien and C. H. Rockwell. Space A-7.
- Electric Service Supplies Company, Philadelphia, Pa.—Keystone-Ivanhoe car lighting fixtures; Golden Glow headlighting equipment, including headlights, turbo-generators, headlight switches, gage lights, clear lights and marker lights; Golden Glow floodlighting projectors; Keystone portable lamp guards; Crystal valve lightning arresters, including signal arresters; Keystone bus equipment. Represented by L. B. Gawthrop. Space K-14.
- Electric Storage Battery Company, The, Philadelphia, Pa.—Working exhibit of Exide batteries in railway service for air-conditioning, car lighting and electric material handling trucks. Represented by A. H. Adkins, G. H. Atkin, E. Bishop, W. Van C. Brandt, J. Cronk, H. S. C. Folk, K. W. Green, W. C. Hooven, W. R. Kappenberg, A. E. Leiferman, W. H. Payne and A. M. Ripley. Spaces M-24 and 26.
- Electro-Chemical Engineering Corporation, Chicago.—Experimental boiler, 210 lb. pressure, equipped with Foam-Meter Electromatic blow-off equipment and water level control; Pyrex apparatus demonstrating Flotation Process of boiler water conditioning; Pyrex apparatus demonstrating principle of water level indication in steam boilers; Foam-Meter electrical instrument box; Foam-Meter blow-off valve, blow-down separator, solenoid valve and electrodes; Gunderson process for corrosion prevention, showing instrument box, electrodes, etc. Represented by L. O. Gunderson and O. W. Carrick. Spaces O-1 and 2.
- Elwell-Parker Electric Company, The, Cleveland, Ohio.—Power industrial trucks, cranes and tractors, built as low-lift, high-lift, fork, crane or tractor, and powered by battery, gas-electric and straight gas units; including crane truck, telescopic tiering fork truck and straight gas-driven low-lift, high-speed truck. Represented by A. H. Dobler, W. F. Hebard, J. P. Lyons, J. F. B. Meikle, T. P. Wyman, J. P. Ascher, S. M. Conant and G. W. Brown. Spaces F-33 and 34.
- Enterprise Railway Equipment Company, Chicago.—Door operating mechanisms for gondola and hopper cars; unit doors and latches for hopper cars; hopper car door frames; cement car outlet gates; cast steel foundation bolsters for all types of freight cars. Represented by Argyle Campbell, A. E. Zimmer, G. B. Dorey, W. L. Gunnison, R. T. Coyne and W. F. Batho. Spaces F-14 and 15.
- Equipment Specialties Division of Union Asbestos & Rubber Company, Chicago.—All-metal bulkheads; metal floors; well traps; hatch closures; flush floor rack holders; drain spouts; miscellaneous fixtures for refrigerator cars. Represented by L. L. Cohen, G. A. Hull, A. C. Deverell, A. F. O'Connor, John Lundvall, W. R. Gillies and Joseph H. Kuhns. Space Q-19 (Stage).
- Ewald Iron Company, Louisville, Ky.—Samples of staybolt iron and engine bolt iron. Represented by G. O. Boomer, W. R. Walsh and G. Hord. Space K-11.
- Fabreeka Products Company, Boston, Mass.—Fabreeka units and pads for the reduction of noise and vibration. Represented by William B. Rogers, Jr., William P. Brennan, T. F. Dwyer, Jr., A. W. McKaig and C. M. Harris. Spaces Q-14 and 15 (Stage).
- Fafnir Bearings, Inc., New Britain, Conn.—Ball bearings; roller bearings; roller journal boxes. Represented by R. N. Hemenway, A. L. Maltman and C. H. Hellyar. Spaces M-6 and 8.
- Flannery Bolt Company, Bridgeville, Pa.—Flexible staybolts. Represented by W. T. Kilborn, E. S. Fitzsimmons, W. C. Masters and W. M. Wilson. Spaces K-5 and 6.
- Ford Sales Company, The J. B., Wyandotte, Mich.—Wyandotte cleaners for railway rolling stock. Represented by B. N. Goodell, S. H. Renton, E. A. Eigenbrot, T. N. Jones and H. J. Perry. Space L-11.
- Fort Pitt Malleable Iron Company, Pittsburgh, Pa.—Malleable iron castings. Represented by Frank J. Lanahan, E. E. Griest and J. S. Lanahan. Space N-24.
- Franklin Railway Supply Company, Inc., New York.—Locomotive booster C-2-H; Radial buffer, type E-2; Precision power reverse gear, type F-1; Franklin power reverse gear, type E; Franklin automatic compensator and snubber; Universal type lubricator; Franklin sleeve joint; McLaughlin flexible conduit; Franklin car connection. Represented by S. G. Allen, H. F. Ball, W. H. Coyle, W. H. Winterrowd, W. T. Lane, H. M. Evans, M. H. Roberts, F. M. Ball, J. E. Long, G. H. Zouck, C. I. Buck, G. W. Alcock and C. W. Floyd Coffin. Spaces I-5, 6, 7, 8, 9, 10 and 11.
- Frost Railway Supply Company, The, Detroit, Mich.—Frost friction truck springs. Represented by Harry W. Frost, Harry W. Frost, Jr., H. E. Passmore, H. C. Van Buskirk and L. E. Endley. Space N-32.
- Galena Oil Corporation, New York.—Samples of lubricating oils and greases for railroads, motor buses, trucks, tractors, automobiles, etc. Represented by R. P. Birtell, I. T. Burney, W. J. McGee, J. C. O'Connor, N. E. Sprowl, A. L. Wescott, B. H. Morris and F. J. Vestal. Space O-3.
- Garlock Packing Company, The, Palmyra, N. Y.—Garlock Chevron throttle packing; American multiple throttle packing; locomotive air pump packing; cab cock packings; Garlock set packings for power reverse gears, feedwater heaters and other appliances; Garlock insulation and front end tape; Garlock gage cock discs; Garlock gage glass washers; ball and expansion joint packing; sheet packings and gaskets. Represented by George L. Abbott, Phil Arnold, L. P. Dugan, H. J. Ramshaw, R. W. Perkins, H. A. Clark, F. E. Erlandson, A. E. Munch, Jr., T. H. Dunlevy, H. M. Sweetin, R. W. Chambers, F. W. Blake, E. J. Ritchey, D. P. Morgan, F. W. Moore, Ford Wilders and R. J. Hinkle. Spaces L-8 and 10.
- General Electric Company, Schenectady, N. Y.—Complete railway air-conditioning equipment in operation; electric-type railway speedometer; single-operator portable DC welder; mercury vapor-incandescent combination lighting equipment. Represented by H. L. Andrews, E. P. Waller, C. C. Bailey, E. M. Bill, R. F. Goggin, B. S. Pew, W. J. Hedlev, F. L. Headley, J. A. Pledge, F. L. Kittredge, F. P. Jones, I. H. Lohrlink, Lynn Covey, C. Darticos, F. A. Faron, I. F. Walker, C. K. West, S. Littlejohn, O. J. Gilchreest and G. H. Hill. Spaces F-10, 11 and 12.
- General Machinery Corporation, Hamilton, Ohio.—90-in. balanced quartering machine; car axle burnishing machine; side head boring mill. Represented by G. R. Shields, A. C. Waite, O. S. Ackley, A. Wood, W. Brown, J. J. Fisher, D. S. Woods, P. C. Macbeth, W. McCormick, B. Donahue and W. J. Mollinaux. Spaces LK-1, 2, 3 and 4.
- General Steel Castings Corporation, Eddystone, Pa.—Scale models of the following Commonwealth devices: Locomotive bed, water bottom tender frame, six-wheel tender truck, four-wheel and two-wheel engine truck, four-wheel and two-wheel trailer truck, ash pan, Boxnook driving wheel center, drop coupler pilot, lift coupler pilot, six-wheel passenger car truck, passenger car framing and freight car underframe. Represented by Harrison Hoblitzelle, H. M. Pfleger, C. P. Whitehead, E. G. Hall, Gust W. M. Sheehan, H. R. Bartell, J. A. McCormick, P. R. Keller, C. S. Shallenberger, G. F. Driemeyer, W. O. Ashe, R. A. Sherman, A. E. LeGare, H. Elmer Doerr, F. B. Barclay, J. C. Travilla and A. C. Wintemberg. Spaces I-1, 2, 3 and 4.
- George Manufacturing Company, Inc., Philadelphia, Pa.—Automatic drain valves; automatic drain and relief valves. Represented by R. H. George and H. L. Kenah. Space LC-2.
- Gilg, Henry F., Pittsburgh, Pa.—Ludlum Steel Dunkirk solid and rolled hollow staybolt steel; Ludlum Steel tool steel samples; Gilg washout valve; Magic portable lamp guard. Represented by Henry F. Gilg. Space Q-8 (Stage).
- Globe Steel Tubes Company, Milwaukee, Wis.—Globe seamless steel locomotive boiler tubes, superheater tubes, arch tubes and safe ends; Foran process locomotive boiler tubes; Ihrigizing process of rendering ferrous articles resistant to heat, corrosion and wear; various parts of railway equipment and other articles treated and sectioned to show silicon alloy case. Represented by F. J. O'Brien, R. R. Lally, J. W. Floto and H. K. Ihrig. Space K-13.
- Gold Car Heating & Lighting Company, Brooklyn, N. Y.—Gold steam, hot water and electric car heating specialties; Gold non-adjustable diaphragms for vapor regulators and steam traps; Gold enlarged end train pipe valves, steam couplers and pressure regulating valves; Gold electric heaters; overhead electric car heating units; portable, wall and blower type heating units for industrial purposes; Gold automatic temperature control for steam and electric systems; Gold solenoid operated remote control valves for operation on alternating or direct current. Represented by F. W. Dearborn, H. C. Poillon, F. H. Smith, Tom Moore, J. L. Francis, J. W. Kearney and E. L. Barr. Space K-2.
- Gould Coupler Corporation, Rochester, N. Y.—Gould spring plankless double truss truck; Gould lateral motion express truck; Gould couplers and yokes; miscellaneous car castings. Represented by A. E. Heffelfinger, B. W. Kadel, C. R. Naylor, W. J. Roehl, C. J. Symington, J. A. Sauer, H. Sparks, H. K. Smith, H. G. Swan and D. L. Townsend. Space C-1.

Gould Storage Battery Corporation, Depew, N. Y.—Gould light-weight 600 A. H. 8-volt "Monobloc" assembly, and 800 and 1,000 A. H. "Monobloc" units for air conditioning and car lighting; batteries for signal and control applications, replacement elements for all types of car lighting and air conditioning equipment; storage battery accessories and spares; demonstration of process in manufacturing Planté and Kathode cells. Represented by A. M. Andersen, U. W. McMillan, E. R. Jacobsen, E. T. Kopper, J. C. Sykora and K. Dawkins. Spaces Q-2 and 3 (Stage).

Graham-White Sander Corporation, Roanoke, Va.—Graham-White manual and remote control sanders; Graham-White special hook-up for selective sanding; manual and automatic control sand spreaders; sanders for light-weight, high speed trains and other Diesel units; Doarnberger type boiler wash-out plugs; tilting spring car snubber. Represented by James Frantz, Virgil L. Frantz, Frank H. Cunningham, Clyde Keever, Frank Morley, W. L. Ransom and F. D. Munn. Space L-2.

Gregg Company, Inc., The, Philadelphia, Pa.—Panels exhibiting freight and refrigerator car paint and different kinds of primers. Represented by A. Pierce Gregg and John C. Bratten. Space G-9.

Grip Nut Company, Chicago.—Reception booth. Represented by L. W. Kass, E. H. Weigman, C. S. Carter, J. L. Logan, H. J. Tierney and J. H. Sharp. Spaces M-34 and 35.

Gustin-Bacon Manufacturing Company, Kansas City, Mo.—Fiberglass insulation; Lock-Tite pins; locomotive cab seat; Lowrey couplings; brake pipe repair couplings; brake pipe anchors; air pump strainer; throttle rod stuffing box. Represented by A. L. Gustin, A. L. Gustin, Jr., John W. Foyle, W. E. Davis, John H. McCartney, J. O. Brelsford and P. D. Mallay. Spaces Q-5, 6 and 7 (Stage).

Hanna Stoker Company, The, Cincinnati, Ohio.—Locomotive stoker. Represented by W. T. Hanna, J. J. Byrne, W. F. Sampson, C. D. King and S. K. Witt. Space H-10.

Harnischfeger Corporation, Milwaukee, Wis.—300 and 400-ampere P. & H. Hansen Smootharc welding machines; Smootharc welding rods; welding demonstration booth; one-ton, type R variable speed, push button control P. & H. electric hoist; photographs. Represented by E. C. Meyer, G. W. Hoskins, U. V. Westover, H. R. Noble, F. Leslie and I. Shapiro. Spaces LH-2 and 4.

Haskelite Manufacturing Corporation, Chicago.—Aluminum Plymetl, waterproof Plywood core with face of light gage aluminum on one or both sides; Galvaneal steel Plymetl, waterproof Plywood core faced with Galvaneal steel on one or both sides; stainless steel Plymetl, waterproof Plywood core faced with stainless steel; Steelwood, natural wood veneer, bonded to light sheet steel; Phenaloid waterproof Plywood. Represented by G. R. Meyercord, Jr., H. G. Bersie and C. E. Scott. Spaces LF-6 and 8.

Hazard Insulated Wire Works, Wilkes-Barre, Pa.—See The Okonite Company. Spaces M-29, 31 and 33.

Hennessy Lubricator Company, New York.—Oil bath mechanical lubricators for journals; applied on B. & O. test passenger locomotive No. 5600 in track exhibit. Represented by J. J. Hennessy, W. Edgar Hamsher and T. F. Tarberry. Space O-23.

Heywood-Wakefield Company, Gardner, Mass.—Bus and railroad seats. Represented by George E. Cornwall, J. V. Conway, H. B. Gengenbach, Walter M. Swope and Bertram Berry. Space D-1.

Holland Company, Chicago.—Holland Volute friction bolster springs. Represented by Cyrus J. Holland, Cyrus E. Holland and Arthur H. Carlson. Spaces Q-9 and 10 (Stage).

Hollup Corporation, Chicago.—Welding electrodes, equipment and supplies; Westinghouse welding machine. Represented by W. E. Palmer, H. F. Zeigler, O. L. Howland, M. H. Bunting and G. O. Rohder. Space G-13.

Hulson Grate Company, Keokuk, Iowa.—Tuyere unit type Hulson grates. Represented by H. N. Gardner and J. W. Hulson. Space K-8.

Hunt-Spiller Manufacturing Corporation, South Boston, Mass.—Locomotive parts of Hunt-Spiller air furnace Gun Iron, including cylinder and piston valve bushings; piston valve bull rings; crosshead shoes; pedestal shoes and wedges; outer bushings for floating rod bushings; cylinder and piston valve packing rings; Duplex cylinder and valve packing rings; Duplex lip cylinder packing rings; Duplex lip locked cylinder packing rings; combination iron and bronze Duplex lip and lip locked packing rings; combination iron and bronze Duplex cylinder packing rings and valve packing rings; bronze Duplex cylinder and lip locked cylinder packing rings; bronze Duplex valve rings; piston bull rings with bronze inserts in trailer segment and also with Hunt-Spiller bronze and iron renewable trailer segment units; cast steel pistons for application with Hunt-Spiller lip packing rings; Hunt-Spiller light-weight locomotive piston valve; typical application of Hunt-Spiller duplex rings; Diesel engine parts of Hunt-Spiller Gun Iron, including combination cylinder head and liner for Burmeister & Wain auxiliary engine, Diesel engine piston, Diesel valve cage and Diesel engine rings; automotive parts of Hunt-Spiller Gun Iron, including brake drums, finished and semi-finished cylinder sleeves, and clutch plates. Represented by V. W. Ellet, E. J. Fuller, A. B. Root, Jr., C. L. Galloway, F. B. Hartman, R. R. Wells, F. W. Lampton, D. F. Hall, L. O. Arringdale and G. L. Leach. Spaces O-13 and 14.

Hunter Sash Company, Inc., Flushing, N. Y.—Aluminum car sash, demonstrating a new method of water-tight glazing. Represented by Gale Hunter, Thomas J. Collieran and Robert Love. Space LF-4.

Huron Manufacturing Company, Detroit, Mich.—Washout and arch tube plugs; smoke chamber inspection plugs; direct steaming connections. Represented by R. J. Sherlock, P. C. Cady and L. E. Hassman. Space M-10.

Hyatt Bearings Division, General Motors Corporation, Newark, N. J.—Hyatt roller bearing journal boxes as used on passenger cars and tenders; Hyatt journal box bearing and parts which have had over a million miles of service. Represented by H. K. Porter, G. W. Young, H. M. Carroll, W. L. Iliff, J. W. Wiley, R. F. Wilson, R. J. Brittain and R. Steinmann. Space E-36.

Illinois Railway Equipment Company, Chicago.—Mobil brake hanger suspension; Economy brake beam head; Servex brake head wear plate; Wright pipe clamps for freight and passenger cars; Azee retaining valve

anchor; Wright branch pipe tee anchor; Perfection cotter lock; Positive brake pin lock; Azee double action floor rack hinge for refrigerator cars; Azee seal hook lock for refrigerator car hatch covers; Positive draft key retainer lock. Represented by Braman S. Rockwell, E. Payson Smith, J. C. Keene, M. S. Johnson, V. H. Harbert, W. W. Fetner, C. S. Carter, J. A. Cameron and D. T. Main. Spaces P-27 and 28.

Independent Pneumatic Tool Company, Chicago.—Thor pneumatic tools, featuring the Thor pneumatic Hamerench for nut running and removing; rotary drills; screw drivers; nut setters; grinders and hammers; Thor Universal and high frequency electric tools. Represented by N. C. Hurley, W. A. Nugent, N. C. Hurley, Jr., A. Anderson, J. A. Hill, F. J. Passino, P. H. Benecke, H. C. Halbert, J. P. Fletcher, F. H. DuSelle, E. R. Wyler, J. A. Brennan and B. H. Johns. Spaces LM-2, and F-29, 30 and 31.

Ingersoll-Rand Company, New York.—Pneumatic tools; impact wrenches; motor pumps; small compressors; multi-vane drills; chipping hammers; pneumatic sump pumps; accessories. Represented by George A. Gallinger, E. J. Lonn, W. J. Heinz, G. C. Kehrer, R. W. Bailey, W. A. Johnson, K. I. Thompson, J. F. Kroske and C. H. Rogers. Spaces F-1, 2, 3 and 4.

International Harvester Company, Chicago.—International motor trucks; International industrial tractors; International power units. Represented by W. K. Perkins and H. A. Maloney. Space LQ-5.

International Nickel Company, Inc., The, New York.—Charts showing the application of nickel alloy steels, nickel cast iron, nickel bronze, etc., in the construction of railroad equipment. Represented by A. J. Wadhams, H. J. French, C. McKnight, T. H. Wickenden, A. L. Roberts, J. S. Vanick, F. J. Walls, E. J. Bothwell, J. N. Armstrong, H. S. Lewis, G. W. Strahan and R. A. Wheeler. Spaces F-23, 24 and 25.

Jenkins Company, George O., Bridgewater, Mass.—Standard leather fibre draft guards, latest A.A.R. specifications; new leather fibre draft guards with special axle hugging ring. Represented by Nelson N. Marshman. Space G-15.

Johns-Manville Sales Corporation, New York.—Stonefelt passenger and refrigerator car insulation; Salamander car insulation; Hairinsul standard hair felt; Dry Zero railroad blanket; Dry Zero Hi-Speed blanket; 85 per cent magnesia boiler lagging and pipe insulation; sponge felt pipe insulation; Wovenstone pipe insulation; Insutape pipe wrapping; packing cups and slip type expander rings for power reverse gears; sea ring packing; air pump packing; throttle packing; cab cock packing; power plant packings; refrigerator car threshold plates; truss plate flooring; friction bushings for tumbling shafts. Represented by John H. Trent, C. S. Clingman, R. P. Townsend, George Christensen, C. E. Bryant, Jr., E. H. Wells, Jr., A. C. Pickett, J. S. Doyle, T. O'Leary, Jr., J. D. Johnson, W. R. Bush, E. L. Colopy, P. R. Austin, F. J. Horne, W. J. Stewart, J. I. Farrell, P. E. Redding and B. E. Blaisdell. Spaces E-20, 21 and 22.

Johnston Manufacturing Company, Minneapolis, Minn.—Locomotive tire heater; locomotive fire kindlers; rivet forges; heating torches; direct-connected pressure blowers. Represented by H. L. Burrhus. Space LD-5.

Jones & Laughlin Steel Corporation, Pittsburgh, Pa.—Jalten steel; J & L Seamless steel boiler tubes; J & L standard pipe, seamless and welded; J & L cold finished steel and shafting; J & L spikes and tie plates. Represented by W. B. Todd, J. C. Foster, H. E. Graham, William Miller, A. A. Wagner, T. C. Ham, T. G. Roberts, Henry Dorney, A. E. Crockett, R. T. Rowles, H. W. Graham, A. E. Marble, L. T. Willison, J. F. Murray and Charles Conley. Spaces M-13, 14, 15, 16 and 17.

Journal Box Servicing Corporation, Indianapolis, Ind.—Renovating machinery; device for prevention of waste grabs on car journals; photographs of journal box packing. Represented by W. T. Bissell, F. K. Mays and D. W. Lamoreaux. Spaces O-7, 9 and 11.

Joyce-Cridland Company, The, Dayton, Ohio.—Complete line of Joyce jacks for railway service. Represented by Huston Brown, J. M. Switzer, R. J. Ward, W. F. Bippus, Jr., W. E. Webster, Kert Hatt, M. P. Smith, J. P. Gentry, O. L. Wright, H. H. Moffett, C. E. Murphy, E. A. Mann, A. A. Walker, L. P. Collins, D. L. Eubank and R. C. Bracken. Spaces C-9 and 10.

Karpen & Brothers, S., Chicago.—Coach seating; parlor car and club car furniture. Represented by George B. Cross, R. G. Brooks, C. A. Van Derveer, Sr., and C. A. Van Derveer, Jr. Space G-8.

Koppers Company, Pittsburgh, Pa.—Products of affiliates and subsidiaries serving the railway field, including The Wood Preserving Corporation, Pittsburgh, Pa.; Tar and Chemical Division, Pittsburgh, Pa.; The Koppers Coal Company, Pittsburgh, Pa.; New England Coal & Coke Company, Boston, Mass.; American Hammered Piston Ring Division, Baltimore, Md.; The White Tar Company of New Jersey, Inc., Kearney, N. J.; The Maryland Drydock Company, Baltimore, Md.; Bartlett Hayward Division, Baltimore, Md.; Western Gas Division, Ft. Wayne, Ind.; National Lumber & Creosoting Company, Texarkana, Ark.; Gas and Coke Division, Pittsburgh, Pa. Represented by S. S. Bruce, W. F. Munnikhuysen, E. J. McGehee, C. C. Calvin, J. E. Grennan, Allen W. Morton, John A. Worthington, E. S. Freeman, Jr., D. D. DeBotts, John H. McKenna, John W. Vogler and Harry Passmore. Spaces E-34 and 35.

Landis Machine Company, Waynesboro, Pa.—1½-in. Landmaco staybolt threading machine, equipped with one Lanco head for cutting straight threads, and one Landis reverse taper head for cutting tapered threads; demonstration of threading staybolts. Represented by F. C. Delcher, C. W. Kepner, D. R. Stoner, G. M. Stickell and C. N. Kirkpatrick. Spaces LG-5 and 7.

Lebanon Steel Foundry, Lebanon, Pa.—Roller bearing axle housings for locomotive and tender application, also certain types for passenger cars; center plates for articulated, high-speed streamline trains; cast eccentric cranks with pins; ball joint castings used in locomotive steam lines; draft gear housings and other castings used on streamline trains; stainless steel castings. Represented by W. H. Worrlow, A. J. McDonald, P. E. Gerhard, W. B. Sullivan, Fred Grotts and S. A. Quinn. Spaces N-25 and 27.

Lehon Company, The, Chicago.—Mule-Hide cab curtain canvas, canvas car roofing, burlap back car roofing, plastic car roofing, waterproof insulat-

- ing paper, sill covering, asphalt compounds, M.C.B. cement, waterproofing asphalt, waterproofing fabrics, and felts. Represented by Tom Lehon, E. A. Leonard, J. W. Shoop, H. A. Wolfe, A. D. Morrow and W. J. Roehl. Space N-18.
- Lewis Bolt & Nut Company, Minneapolis, Minn.—Sealtite car bolts; engineering bolts; Macer journal bearing protector. Represented by Meyer Paper, H. W. Johnson and George Prendergast. Space E-17.
- Lima Locomotive Works, Inc., Lima, Ohio.—Photographs of locomotives. Represented by S. G. Allen, J. E. Dixon, H. W. Snyder, Walter B. Carnes and John D. Dickinson. Spaces I-5, 6, 7, 8, 9, 10 and 11.
- Lincoln Electric Railway Sales Company, The, Cleveland, Ohio.—Lincoln "Shield-Arc SAE" electric welding machines; Lincoln welding electrodes; Lincoln welding accessories. Represented by C. C. Lanken, J. A. Coakley, Jr., J. E. Buckingham, R. H. Ratliff and J. L. Johnson. Spaces LN-9 and 11.
- Locomotive Finished Material Company, The, Atchison, Kan.—Light-weight alloy steel locomotive piston with combination universal sectional bull ring packing; miniature cast steel, box type locomotive wheel center; miniature cast steel, one-piece locomotive cylinder with back cylinder heads cast integral; locomotive piston valve sectional packing rings; cast steel cylinder head for Diesel engines; light-weight alloy steel, high-speed passenger truck. Represented by H. E. Muchnic, R. L. McIntosh, A. H. Moorhead, G. W. Taylor and W. W. Fetner. Spaces O-20, 22 and 23.
- Locomotive Firebox Company, Chicago.—Nicholson thermic syphons; Cyclone front ends; Christy pneumatic lubricators for engine trucks; syphon-sanders. Represented by Walter S. Carr, George R. Carr, George N. DeGuire, Leslie R. Pyle, John Baker, C. M. Rogers, B. E. Larson and M. A. Foss. Spaces P-13, 14 and 15.
- Lubrication Products Company, Cleveland, Ohio.—"Stapax" journal lubricator. Represented by H. F. Hackedorn, Jr., Charles K. Hamilton and R. M. Mann. Spaces F and G, Lobby.
- Lukens Steel Company and divisions, Coatesville, Pa.—Special steels, including nickel alloy, silico-manganese, chrome-manganese-silicon, carbon molybdenum and manganese silicon for locomotive boilers, locomotive fireboxes and other parts of locomotives and cars. Represented by Everett Chapman, R. C. Sahlin, W. S. Wilbraham, E. J. Charleton, J. F. Wiese, C. P. Campbell, R. W. Moffett, F. H. Gordon, G. L. Gordon, W. C. Simpson, L. P. McAllister, W. G. Humpton, Harry Loeb and G. M. Gillen. Spaces N-1, 2 and 3.
- Lukenweld, Inc., Coatesville, Pa.—See Lukens Steel Company. Spaces N-1, 2 and 3.
- Lunkenheimer Company, The, Cincinnati, O.—Lunkenheimer bronze, extra heavy A.A.R. valves; inside and outside screw patterns, globe and angle and with male or female inlet; Union outlet connections; railroad regrounding valves; iron body "Ferrenewo" and bronze "Renewo" valves; 600-lb. steel bonnet-thread-bushing valves; "Alvor" constant level oil control; aluminum body "Alsen" oil cup; bronze "Penlo" lubricator; full-way and plug type seats and discs for "Renewo" and A.A.R. valves. Represented by W. George Cook and Karl B. Litzelman. Space E-32.
- MacLean-Fogg Lock Nut Company, Chicago.—"M-F" lock nuts, water-tight bolts, nut locks, defect card receptacles, dust guards, and lock-tight floor clips. Represented by J. A. MacLean, J. W. Fogg, J. A. MacLean, Jr., L. A. Rowe, A. W. MacLean, W. G. Wilcoxson, M. Flanagan and A. B. Nilsen. Space G-17.
- Magnaflux Corporation, New York.—Magnaflux equipment; demonstration of the Magnaflux method of inspection for determining defects in steel parts of locomotives. Represented by A. V. deForest, F. B. Doane, C. A. McCune, C. E. Betz and H. G. Doran. Space M-18.
- Magnus Metal Corporation, Chicago.—Babbitt and Satco lined journal bearings; journal box, showing Magnus lubricator; Magnus lubricator pad; Faus hot box alarm bearings; locomotive castings; steam metal; Satco metal. Represented by W. H. Croft, W. P. Carney, W. D. Hickey, W. H. Croft, Jr., G. A. Murphy, M. J. Turner, N. P. Lyons, L. C. Dodd, G. W. Hayden, J. E. Brown, R. J. Shoemaker and E. J. Cole. Space O-21.
- Mallory & Company, Inc., P. R., Indianapolis, Ind.—Railway battery chargers with d.c. power dome (mobile units and on-car units). Represented by Rogers Mallory, E. A. Lundy and C. A. Kotterman. Spaces LH-6 and 8.
- Mandel Brothers, Chicago.—Photographs of railroad car interiors; samples of carpets, window shades, rubber flooring and draperies. Represented by E. W. Beck and R. C. Williams. Spaces O-30, 31 and 33.
- Manganese Steel Forge Company, Philadelphia, Pa.—Rol-Man wear plates, pins and bushings; driving box pedestal wear plates. Represented by H. Howe. Space LE-5.
- Massachusetts Mohair Plush Co., Philadelphia, Pa.—Mohair upholstery materials. Represented by Joseph E. Duval, Nathaniel E. Duval, Edward D. Singer, H. M. Bliss and James I. Orr. Spaces E-39, 40 and 41.
- McCabe Manufacturing Company, Lawrence, Mass.—Working model of flanging machine; front flue sheet, 1 in. thick, flanged cold. Represented by Fred H. McCabe. Space B-3.
- McConway & Torley Corporation, Pittsburgh, Pa.—A.A.R. standard type "E" couplers, rigid and swivel types; cast steel, rigid and swivel type coupler yokes; swivel coupler butts; Pitt pivoted and Pitt rigid type passenger couplers; cast steel quadruple shear passenger coupler yokes; miscellaneous freight car steel castings. Represented by H. F. Dunbar, W. J. Regan, T. A. Reynolds, W. C. Buske, Enoch George, Jr., and J. J. Hughes. Space G-3.
- Mercury Manufacturing Company, Chicago.—Electric storage battery and gasoline engine-powered industrial tractors; electric storage battery and gas-electric-powered elevating platforms and fork and ram type trucks; industrial trailers for railroad freight house and shop service. Represented by L. J. Kline, P. K. McCullough, P. W. Cyphers, J. R. Henkle, Conrad Hibbler, L. R. Millar, L. F. Meissner, Jr. and O. T. Henkle, Jr. Spaces LK-13, 14, 15 and 16.
- Metal Coatings Company of America, Philadelphia, Pa.—Metal layers. Represented by W. L. Ludington, R. Nichols, E. Burns, H. O'Neil and C. H. Atherholt. Space LP-1, 2, 3, 4, 5, 6, 7 and 8.
- Metal & Thermit Corporation, New York.—Specimen portion of arc welded car underframe; thermit rail weld as used in eliminating rail joints in continuous rails; Murex heavy coated electrodes for arc welding electrodes for welding various high-strength alloy steels; motion pictures of thermit rail welding. Represented by C. D. Young, John Plaskon, C. E. Gearhart and E. J. Knapp. Spaces LN-6 and 8.
- Midland Company, The, South Milwaukee, Wis.—Full-size baggage car door equipped with Midland No. 101 and No. 1012 safety hangers and No. 409 device for releasing the lock; model baggage car door hanger equipped with Midland hangers and device for closing the door practically sealed tight; various types and styles of Midland baggage car door hangers. Represented by R. A. Nourse and F. G. Schwartz. Space M-19.
- Midvale Company, The, Nicetown, Philadelphia, Pa.—Photographs of machining operations using Midvale high speed steels. Represented by Stuart Hazlewood, Charles Tietze, H. C. Myers, W. A. L. Ketcham, Frank Sleath, G. K. Flavell, A. O. Schaefer and H. H. Ziesing. Space L-5.
- Milar & Company, Chicago.—Milar car cement; Milar's No-Krode primer. Represented by Karl A. Milar and H. E. Griffin. Space P-33.
- Miner, Inc., W. H., Chicago.—Miner friction draft gears and buffers, truck spring snubbers, power brakes, locking center pins, side bearings, refrigerator car door fasteners, center plate shims, and cast steel yokes. Represented by A. P. Withall, G. A. Johnson, W. E. Robertson, B. S. Johnson, W. A. Berger, J. H. Link, R. H. Weber, R. J. Miner, A. G. Peterson, G. O. Lewis, R. J. Olander, W. A. Heitner, A. E. Denter and W. E. Withall. Spaces G-3 and 4.
- Mishawaka Rubber & Woolen Manufacturing Company, Mishawaka, Ind.—Mishawaka foam rubber mattresses; Mishawaka foam rubber cushions; sample railroad chairs equipped with Mishawaka foam rubber cushions. Represented by J. S. Cates, W. L. Jantzen and E. P. Brainard. Space K-10.
- Morganite Brush Company, Inc., Long Island City, N. Y.—Brushes for electric and Diesel-electric locomotives, headlight and train lighting generators, fans and power plant equipment; carbon packing for turbine units. Represented by L. A. Heath, L. L. Bender, J. F. Drumme and R. L. Lawrence. Spaces LC-5.
- Morton Manufacturing Company, Muskegon Heights, Mich.—Photographs of Morton draw-cut machine tools for railroad shops. Represented by G. F. Goble and Matt. H. Morton. Space LG-8.
- Moss Rose Manufacturing Company, Chicago.—Complete line of interior transportation fabrics. Represented by George A. Torrey and R. Kitter. Space LH-11.
- Motor Wheel Corporation, Lansing, Mich.—Railway car spring plates; metal dust guards; triple valve protector caps; routing and defect cardboard brackets; pressed steel placard holders for tank cars; pressed steel combination brake beam and bottom rod supports. Represented by H. E. McGiveron and J. L. Ortner. Space LE-6.
- Nathan Manufacturing Company, New York.—Nathan mechanical lubricators, oil atomizers, oil distributors and chassis lubricating system; Nathan hydrostatic lubricators, lifting and non-lifting locomotive injectors and injector starting valves, water columns, water gages and low water alarm, boiler drop plugs, boiler checks, and locomotive steam whistles. Represented by A. Nathan, Jr., C. J. Banning, J. W. Coleman, H. G. Cook, F. Ehredt, J. F. Farrell, B. E. Folke, W. S. Harris, R. H. Jenkins, L. Kassander, J. A. Kelly, J. D. Spaulding and R. Welsh. Spaces O-17, 18 and 19.
- National Aluminate Corporation, Chicago.—Nalco automatic blowdown valve; Nalco Nalcometer for determining dissolved solids in boiler water. Represented by P. W. Evans, C. B. Clint, R. E. Falkenburg and H. A. Marshall. Space C-12.
- National Bearing Metals Corporation, St. Louis, Mo.—Disc-Flo journal bearing unit; Glypocell System of journal bearing lubrication and journal box sealing; Tiger bronze engine castings; Arctic bronze car journal bearings; Tiger bronze railway motor axle and armature bearings; More-Jones babbitt metal and solders; special bronze castings. Represented by Albert Vigne, N. Duan, S. W. Crawford, Norman Chivvis, R. R. Hessler, and George W. Wilson. Spaces C-5, 6, 7 and 8.
- National Brake Company, Inc., Buffalo, N. Y.—Eight types of Peacock brakes for electric locomotives, passenger cars and different classes of freight cars. Represented by Frank D. Miller and E. C. Mersereau. Space M-20.
- National Lock Washer Company, The, Newark, N. J.—Models of National DeLuxe windows for railway coaches; other car window equipment. Represented by O. H. Loutrel, G. L. R. Masters, S. E. Blessin, A. W. Preikschat, K. L. Whitney and T. Tobey. Space F-4.
- National Malleable & Steel Castings Company, Cleveland, Ohio.—National type B (spring plankless) truck; National car truck stabilizer, types F-2-A and B-40-50; A.A.R. standard "E" couplers; National tight lock couplers; Willison coupler; National draft gears, A.A.R. approved types M-17-A and M-50-B; National passenger gear type M-350; National journal boxes; National Isothermos journal boxes; journal box lids; Naco spun steel wheels; steam shovel and anchor chain. Represented by C. C. Gibbs, James A. Slater, Benjamin Nields, Charles Gaspar, E. O. Warner, George V. Martin, T. W. Ashton, L. S. Wright, H. L. Mausk, J. J. Byers, J. H. Jaschka, W. C. Lewis, E. H. Fathauer, G. R. Farrell, J. F. Hutson, F. E. Moffett, E. H. Sherwood, George F. Wilhelmy, T. H. Doyle and J. A. Shafer. Spaces H-11, 12, 13, 14, 15 and 16.
- National Tube Company, Pittsburgh, Pa.—For exhibit see United States Steel Corporation Subsidiaries. Represented by Ira Pool, E. N. Keyes and J. E. Fleming. Spaces Q-4 and 17 (Stage).
- National Twist Drill & Tool Company, Chicago.—Space LF-12.
- Naylor Pipe Company, Chicago.—Naylor spiral lock seam, welded pipe; copper clad steel pipe and tanks. Represented by R. K. Ashton, J. V. McMullan and Enler Naylor. Space LE-8.

New York Air Brake Company, The, New York.—Display board including AHSC high speed brake equipment units; No. 22 valve bracket sectioned to show internal coring; D-22-C control valve assembly; "AB" sectional assembly; No. 8-ET equipment brake valve pedestal complete; main reservoir line and 2-in. pump filters, with C-4-A5-3 filter inserts, sectioned; new double, self-locking, passenger angle cock and handle; new high speed train self-locking cutout cocks; six-pump, force-feed air compressor lubricator with terminal fittings; sectioned KM vent valve; Core assemblies for various parts. Represented by E. F. Wentworth, G. Kleifges and G. A. Thompson. Spaces N-7, 9 and 11.

Nickel Chromium Plating Corporation, Chicago. — Connecticut portable electroplating machines and accessories; portable electroplating machines; special plating brushes, anode and plating solution. Represented by S. A. Stephens and Charles J. Smith. Space G-11.

Nicol Corporation, George A., New York.—Nicolfelt for insulation and sound deadening; Tufocote Reflectal, aluminum faced paper for passenger car insulation; standard hair felt; Refer Felt for refrigerator car insulation; punched felt; Broadloom carpeting; magnesia products; pipe coverings; packings; locomotive lagging; listing tape; rollboard and asbestos paper; asbestos millboard. Represented by George A. Nicol, Jr., and Victor Willoughby, Jr. Space M-7.

Oakite Products, Inc., New York.—Working scale models of streamline and other trains; new Oakite dual-purpose nozzle for steam cleaning and paint stripping; tank for cleaning filter screens used in air-conditioning equipment; photographs and drawings showing Oakite methods and materials for cleaning and sterilizing cars and other equipment and machinery. Represented by B. C. Browning, D. X. Clarin, L. B. Johnson, C. Johnson and H. L. Gray. Spaces G-16 and 18.

Ohio Brass Company, Mansfield, Ohio.—O-B automatic, tight lock A.A.R. type couplers; automatic train line connectors for steam, air and electric circuits; O-B "Hammerhead" signal bonds. Represented by A. L. Price, J. M. Strickler, E. A. Larsson, G. L. Draffan and J. R. Palmer. Spaces E-18 and 19.

Ohio Injector Company of Illinois, The, Chicago.—Reception booth. Represented by William S. Furry and Frank William Edwards. Space P-12.

Okadee Company, The, Chicago.—Okadee steam and air-operated cylinder cocks; cylinder cock operating valves; blow-off and blower valves; water glass protectors; tender hose couplers; front end hinges; drain valves; blow-off mufflers and separators; blow-off valve and muffler connections. Represented by A. G. Hollingshead, C. G. Learned, J. F. Raps, G. P. Dirth and C. W. Ploen. Spaces P-5 and 6.

Okonite-Callender Cable Company, Inc., The, Paterson, N. J.—See The Okonite Company. Spaces M-29, 31 and 33.

Okonite Company, The, Passaic, N. J.—Okonite braided and lead covered cables; Okocord all-rubber portable cables; Okoprene oilproof Okocord; Okonite varnished cambric; Okocloth heat-resisting cambric; Okolite high-voltage cable; Okosheath non-metallic cable; Okobestos heat-resisting cable; Okoglass; Candee weatherproof wire; submarine, control and elevator cable; transformer leads; switchboard, motor lead and railway signal wire; Okojute track wire; locomotive headlight wire; car, train and jumper cable; Okonite telephone and telegraph wire; ignition and other automotive cable; Okonite rubber splicing tape; Manson friction tape; Okonite cement; Okonite-Callender low and high tension impregnated paper cables; Oilostatic, new type electric power transmission system, 132 kv.; Hazard insulated wire and cable. Represented by J. D. Underhill, F. J. White, A. L. McNeill, A. W. Gabriel and H. A. Hamilton. Spaces M-29, 31 and 33.

Oxweld Railroad Service Company, The, Chicago.—Complete oxy-acetylene welding and cutting equipment for railroads. Represented by J. H. Rodger, G. P. Bogert, M. Burnett, Jr., F. G. Hasse, E. Cordeal, M. C. Beymer, G. N. DeGuire, William Leighton, H. W. Schulze, W. Jones, G. B. Moynahan, H. B. Vander Poel, L. F. Flood, W. H. Matthes, R. R. Kester, C. S. Wright, M. J. Rotroff, U. J. West, J. E. Kniple and P. F. Flood. Spaces N-13, 14, 15 and 16.

Packless Metal Products Corporation, Long Island City, N. Y.—Seamless flexible metal hose; detachable, solderless, brazelless couplings for power reverse gear, etc. Represented by H. W. Barhyte and W. H. Blackmer. Space LH-9.

Paige-Jones Chemical Company, Chicago.—See National Aluminate Corporation. Space C-12.

Pantasote Company, Inc., The, New York.—Pantasote curtains de luxe; Pantasote car seating; fire resistant Agasote car headlining; vestibule car curtains. Represented by William Anderson, H. H. Horn, Frank R. Outerbridge, P. J. Hickey and D. M. Waterhouse. Spaces M-30 and 32.

Parker Appliance Company, Cleveland, Ohio.—Parker tube couplings in brass, aluminum alloy and steel; tube benders; flaring equipment; globe and needle valves; plug cocks; check valves; water glasses. Represented by C. E. Klamm, F. E. Amon, K. C. Howe and A. L. Parker. Space LD-6.

Parker-Kalon Corporation, New York.—Self-tapping screws; self-tapping patch bolts; socket head cap and set screws. Represented by J. M. Hoghland, J. J. Mathe and C. S. Trott. Space LO-1.

Paxton-Mitchell Company, Omaha, Neb.—Paxton-Mitchell metallic piston rod, valve stem and air pump packing. Represented by James L. Paxton, Jr., James J. Keliher, Howard W. Dillon and E. M. Henrickson. Space N-20.

Pearless Equipment Company, Chicago.—USL Durapek car lighting, signal and truck batteries; Burgess dry cells; certified A.A.R. draft gear; charts and photographs showing reclamation of journal box packing. Represented by A. A. Helwig, F. A. Poor, F. K. Mays, D. W. Lamoreaux, D. S. Hoffman, H. A. Matthews and L. C. Hensel. Spaces O-7, 9 and 11.

Penn Iron & Steel Company, Creighton, Pa.—Table, chair, hall tree and bridge lamp fabricated from Lewis Special staybolt iron, bent cold; samples of Lewis staybolt iron, engine bolt iron and chain iron; physical test specimens of these products. Represented by Charles J. Nieman, Wenman A. Hicks and John W. Davis. Space H-9.

Pilliod Company, The, New York.—Long travel Baker Valve Gear, completely assembled; spare parts of standard gear; all of redesigned parts now being furnished for all new locomotive applications. Represented by R. H. Weatherly, Frank H. Clark, L. R. Baker, Frank Fisher and W. F. Hoffman. Spaces N-5 and 6.

Pittsburgh Stainless Steel Fittings Company, Pittsburgh, Pa.—Wallace joint for stainless steel tubing iron pipe connections; Wallace joint patent for sanitary fittings. Represented by A. M. Frauenheim. Space LF-10.

Pocket List of Railroad Officials, The, New York.—Pocket list. Represented by Harold A. Brown, B. J. Wilson and E. Bjerregaard. Spaces M-9 and 11.

Prime Manufacturing Company, The, Milwaukee, Wis.—Prime-Alemite railroad lubricating equipment, cylinder protection valve, automatic cylinder, steam-operated relief valves, windshield wings, clear vision windows, cab ventilator and cab card holder; Prime steam-operated automatic cylinder relief valve operating valve; Prime square thread washout plugs; Prime electric fence controller. Represented by H. G. Wild, D. Allcott Kelly, J. W. Richardson, C. K. Ramp, H. B. Nelson and J. A. Lucas. Spaces E-25, 26 and 27.

Pullman-Standard Car Manufacturing Company, Chicago.—Welded and riveted freight car draft sill constructions tested to destruction; high tensile alloy steel and aluminum alloy sections of passenger car underframes after destruction tests; new Pullmanite journal box and one removed from service; light chilled tread car wheel; samples of welding of various metals. Track exhibit: New type Pullman Roomette car; shell of welded body of Pullman sleeper, made of high tensile alloy steel fully welded with triple bolster trucks; New Haven coach; Kansas City Southern coach; new light-weight, high-tensile alloy steel, fully welded box car; steel sheathed, light-weight, high-tensile alloy steel welded refrigerator car. Represented by C. A. Liddle, H. H. Gilbert, R. L. Gordon, W. N. Barker, J. C. Snyder, F. O. Reemer, C. W. Wright, J. Y. Sloan, E. W. Test, W. H. Mussey, A. Christian, J. B. Rosser, T. B. Gorter, G. M. Shaw, H. G. MacDonald, J. C. Bell, F. W. Alger, N. B. Johnson, F. L. Murphy and James Candlin. Spaces E-1, 2 and 3.

Pyle-National Company, The, Chicago. — Turbo-generators; headlights; floodlights; locomotive headlight switches; terminal boxes and wiring fittings; air conditioning and battery charging plugs and receptacles; passenger car conduit fittings and fixtures; safety switches, plugs and receptacles; junction boxes; conduit fittings. Represented by W. Miller, J. A. Amos, A. N. Martin, R. C. Vilas, L. A. Vilas, E. H. Hagensick, W. A. Ross, J. L. Reese, C. S. Geis, M. M. Connell, W. M. Graves, C. H. Barton, J. V. Baker, G. J. Loewe and G. E. Haas. Spaces L-13, 14, 15, 16, 17 and 18.

Pyrene Manufacturing Company, Newark, N. J.—Various types of fire extinguishers; tire chains for trucks, truck tractors and buses. Represented by J. P. Maloney, Nelson Bauer and E. E. Meacham. Spaces LC-1 and 3.

Railway Accessories Company, Cincinnati, Ohio. — Combination brake beam and bottom rod support. Represented by J. L. Ortnier and R. C. Mohler. Space LE-6.

Railway Business Association, Chicago.—Central diorama and shadow boxes showing evolution of railways and contribution of railway supply and equipment industry to their development. Represented by F. Harvey Middleton and F. Hartford Kolb. Spaces F-19, 20, 21 and 22.

Railway Devices Company, St. Louis, Mo.—Top Notch journal wedges; Real brake jaws; Real defect card holder; Western angle cock holder; Real pipe clamp; Iron Horse car pedestal; Sta-Rite uncoupling lever attachment. Represented by Roland M. Hoerr and Sterling Campbell. Spaces P-34 and 35.

Railway Purchases and Stores, Chicago.—"Convention Number" of Railway Purchases and Stores. Represented by K. F. Sheeran, J. P. Murphy, Jr., and J. R. Moulton, Jr. Space A, Lobby.

Railway Service and Supply Corporation, Indianapolis, Ind.—Journal box packing preparation and renovation equipment; improved journal bearing; improved journal box dust guard; improved journal box sealing lid. Represented by E. S. Pearce, L. D. Grisbaum, F. H. Lutz and K. W. Brossart. Spaces M-2 and 4.

Ralston Steel Car Company, The, Columbus, Ohio.—Reception booth. Represented by F. A. Livingston, B. C. Hanna, C. L. Fox, F. M. Cowgill and H. D. Richardson. Space B, Lobby.

Ready-Power Company, The, Detroit, Mich.—Standard model ECM 36-volt, self-contained automatic gas-electric unit for use on electric trucks or tractors. Represented by Arch R. Smith, L. W. Seago and R. J. Geisler. Space D, Lobby.

Reliance Machine & Stamping Works, New Orleans, La.—"Spee-D" high pressure grease guns; high pressure fittings for locomotive connecting rod lubrication. Represented by E. B. Norman, H. C. Manchester, George A. Pettit and J. W. Coleman. Space G-12.

Republic Steel Corporation, Cleveland, Ohio.—Formed sections of Republic double-strength steel; formed sections of Enduro stainless steel used in the construction of streamline trains; locomotive parts of Agathon alloy steels; bolts and nuts; Toncan iron sheets and pipe; Toncan iron air-conditioning unit for passenger train service; locomotive tube sheet; wire fence; barbed wire; steel fence posts; track spikes; tie plates; Weltruss highway crossing; model of standard steel building; Toncan iron corrugated culverts; Electrunite boiler tubes and mechanical tubing. Represented by W. T. O'Neill, E. K. Connelly, T. W. Davies, A. E. Brown, C. H. Aiken, Dudley Shoemaker, L. W. Fletcher, J. F. Keeler and C. W. Ruth. Spaces E-9, 10, 11, 12, 13, 14, 15 and 16.

Royal Railway Improvements Corporation, Pittsburgh, Pa.—Royal foundation brake gear regulators. Represented by Charles M. O'Boyle, Frank A. Kenney and W. L. Byrne. Space LM-1.

Safety Car Heating & Lighting Company, The, New York.—Power plants, including generators and regulators for lighting and air conditioning railway cars; fixtures for lighting railway cars; air conditioning equip-

- ment for railway cars, including the steam jet and compressor cooling equipment and air distributing fixtures. Represented by W. L. Conwell, H. K. Williams, J. S. Henry, George H. Scott, S. I. Hopkins, L. Schepmoes, A. R. Hamilton, A. B. Mills, H. D. Donnell, C. W. T. Stuart, C. A. Pinyard, E. K. Goldschmidt, D. J. Baille, A. P. Hagar, L. H. Von Ohlsen, J. D. Strobell, C. W. Dunlop, J. C. Montgomery and E. C. Mattern. Spaces E-28, 29, 30 and 31.
- Schaefer Equipment Company, Pittsburgh, Pa.—Schaefer truck lever connections, truck levers, body levers, brake rod jaws, brake beam hangers, brake beam hanger wear-protection plates, and brake shoe keys. Represented by Frederic Schaefer, E. J. Searles, J. E. Gardiner, J. L. Young, F. A. Barbey, Frank Dwyer and H. S. Russell. Space C-11.
- Scullin Steel Company, St. Louis, Mo.—Double truss type freight car truck, self-aligning spring plankless design, 40-ton capacity; Scullin double disc type locomotive driving wheel center; Scullin double disc type locomotive trailer wheel center. Represented by G. L. L. Davis, E. S. Wortham, B. L. Norton, James Glover, R. C. Geekie and H. C. Dreibuss. Space D-6.
- Scully Steel Products Company, Chicago.—For exhibit see United States Steel Corporation Subsidiaries. Represented by A. D. F. Simmons. Spaces Q-4 and 17 (Stage).
- Sellers & Company, Inc., William, Philadelphia, Pa.—Sectional model, latest type "S" Sellers injector, operated by a single lever; sectional Giffard injector, used in the 60's; improved exhaust feedwater heater equipment; Hi-Pressure cleaning jet for washing locomotives, box cars, shop floors, etc.; main check and stop valve with removable seat and valve of Monel metal; boiler washer; boiler tester; coal sprinkler and rail washer; conventional non-lifting injector; miscellaneous parts. Represented by Alexander Sellers, G. H. Benzon, Jr., John D. McClintock, E. L. Hollies, Alexander Sellers, Jr., William M. Grove, J. C. Hinton, T. H. Jessop, James R. New, I. P. Pedrick, P. E. Raymond, D. F. Robinson, B. E. Stone and T. J. Vallance. Space K-1.
- Shelton Looms, The, New York.—Mohair plush for seat upholstery; miniature model plush loom in operation. Represented by Joseph Landes. Space A-6.
- Sherwin-Williams Company, The, Cleveland, Ohio.—Reception booth. Represented by C. R. Jarden, John Schlitz, W. J. Montgomery and W. H. Sipp. Space G-14.
- Silent Hoist Winch & Crane Company, Brooklyn, N. Y.—Krane Kar Model A tractor crane for lifting, transporting and construction applications. Represented by J. W. Wunsch, Samuel Wunsch, M. M. Botnick, G. C. Isbester and Joseph F. Leonard. Spaces LH-5 and 7.
- Simmons-Boardman Publishing Corporation, New York.—Railway Age; Railway Mechanical Engineer; Railway Electrical Engineer; Railway Engineering and Maintenance; Railway Signaling; Marine Engineering and Shipping Review; Car Builders' Encyclopedia; Locomotive Encyclopedia; Maintenance of Way Encyclopedia; American Builder; books on transportation subjects. Represented by Samuel O. Dunn, Henry Lee, L. B. Sherman, Roy V. Wright, F. H. Thompson, F. C. Koch, R. E. Thayer, J. G. Little, C. B. Peck, A. G. Oehler, E. L. Woodward, W. J. Hargest, H. C. Wilcox, D. A. Steel, Charles Layng, H. H. Melville, R. E. Beauchamp, F. J. Fischer, H. A. Morrison, L. R. Gurley, S. W. Hickey, W. F. Rench, Paul Traeger, Andrew Gooback, Frank Kraeger, A. E. Ortlinghaus, E. A. Rehm, L. Milner and L. Muller. Space B-1.
- Sinkler, Inc., Joseph, Chicago.—J-S style No. 66 semi-metallic packing; J-S fibrous packings; Cassco metallic packing; electrode holders; master valve repair set. Represented by Joseph Sinkler and Edward O'Malley. Space Q-12 (Stage).
- S K F Industries, Inc., Philadelphia, Pa.—Union Pacific truck; Baldwin drivers; Pennsylvania and New York Central axles; S K F two-bearing mounting; S K F single-bearing mounting; new type driving box. Represented by W. L. Batt, R. H. DeMott, R. F. Runge, P. Palmgren, F. E. Ericson, G. M. Goodloe, E. M. Harshbarger, R. C. Byler, B. W. Taylor, M. Middleton, J. S. Tawresy and F. S. Ball. Spaces F-26, 27 and 28.
- St. Louis Car Company, St. Louis, Mo.—Exhibit commemorating fiftieth anniversary. Represented by Edwin B. Meissner, George L. Kippenberger, William F. Kamman, C. E. Bleikamp and E. C. Wrausmann. Spaces P-9 and 10.
- Spring Packing Corporation, Chicago.—Spring journal box packing; bagged Spring packing; Spring-lox. Represented by John P. Landreth, John T. Landreth, Walter M. Gibbs and John D. Herr. Space N-17.
- Standard Car Truck Company, Chicago.—Barber stabilized trucks; Barber lateral motion truck device; Barber roller side bearings. Represented by F. L. Barber, F. D. Barber, J. C. Barber, R. E. Frame and E. W. Webb. Spaces H-7 and 8.
- Standard Railway Equipment Company, Chicago.—Improved solid steel roofs with hatch frames; eaves and ridge models improved solid steel roof; eaves and ridge models welded roof; depressed running board. Represented by W. F. Murphy, A. A. Frank, S. G. Rea, A. G. Bancroft, A. S. Merz, A. A. Helwig, G. G. Gilpin, J. H. Schroeder, J. E. Vaughn, J. R. Cralley and J. S. Swann. Spaces A-1 and 2.
- Standard Railway Fuse Corporation, Boonton, N. J.—Space LH-15.
- Standard Steel Works Company, Burnham, Pa.—Reception booth. Represented by W. H. Evans, John Guinn, Mark Noble, C. H. Gaskill, M. H. McCurdy, J. D. Tyson, C. G. Green, F. K. Metzger and R. N. Watt. Space D-2.
- Standard Stoker Company, Inc., The, New York.—Model coal pusher; LT-1 stoker model; 176-in. steel tender trough model; MB-1 stoker complete; H-T stoker complete; BK-1 and HT-1 front and intermediate units; 7-in by 7-in engine crankshaft; type D-36 reverse valve; new style eccentric rod and cap; main bearing brass; main drive gear housing bushing; A.A.R. manifold; cylinder packing rings. Represented by F. P. Roesch, H. H. Wehrhane, R. F. Coulson, B. Peyton, E. A. Turner, N. M. Lower, W. L. Lentz, H. S. Mann, A. L. Whipple, C. T. Hansen, O. B. Capps, J. H. Ichter, E. Schroeder, G. M. Myers, C. R. Davison, W. F. Rosenbaum and M. F. Robertson. Spaces K-15, 16, 17 and 18.
- Stucki Company, A., Pittsburgh, Pa.—Side bearings, showing progress made during the last 40 years. Represented by A. Stucki, A. B. Severn and William C. Hansen. Space P-32.
- Sunbeam Electric Manufacturing Company, Evansville, Ind.—Locomotive headlights and turbo-generators. Represented by J. Henry Schroeder, C. E. Kinnaw and W. E. Richard. Space L-6.
- Superheater Company, The, New York.—Elesco tube and coil type feed-water heaters; Elesco boiler feed pumps, reciprocating and centrifugal; Elesco exhaust steam injector; Elesco tangential steam dryer; American multiple-valve throttle. Represented by P. D. Blanchard, G. L. Bourne, C. A. Brandt, Bard Browne, F. J. Dolan, J. F. Griffin, N. T. McKee, H. B. Oatley, R. M. Ostermann, M. O'Sullivan, F. A. Schaff, M. Schiller, B. Smith, F. W. Smith, R. J. Van Meter, B. C. Wilkerson and A. Williams. Spaces J-9, 10, 11 and 12.
- Superior Hand Brake Company, Chicago.—Superior vertical hand brake; Superior horizontal hand brake; Superior drop shaft brake; Superior brake chain adjuster. Represented by H. C. Smith and R. C. O'Connor. Spaces N-28 and 29.
- Superior Railway Products Corporation, Pittsburgh, Pa.—Superior automatic soot blowers; Duplex pneumatic steam valves and cab operating valves. Represented by Walter E. Larson, Ben H. Lobdell, M. H. Bunting and William O. Martin. Space A-7.
- Symington-Gould Corporation, The, Rochester, N. Y.—Symington truck snubber unit; "Coil-Elliptic" truck springs; Symington journal boxes for cars and locomotives of standard and special designs in malleable iron and steel; Symington dust, water and leak proof dust guard; Symington self-adjusting journal box lids; alloy steel castings. Represented by A. E. Heffelfinger, B. W. Kadel, C. R. Naylor, W. J. Roehl, C. J. Symington, J. A. Sauer, H. Sparks, H. K. Smith, H. G. Swan, D. L. Townsend, J. A. Cameron and D. T. Main. Space C-1.
- Talmage Manufacturing Company, The, Cleveland, Ohio.—Locomotive blow-off valves and safety water gages; freight car hand brakes. Represented by Frank M. Roby. Space P-25.
- Templeton, Kenly & Company, Chicago.—Simplex coupler jacks; Simplex empty car jacks including new No. 2029 single-acting automatic raising and lowering, 20-ton jack; Simplex geared jacks, journal jacks, push and pull jacks, new No. 46 car siding jack and electrified track jacks; Simplex G-Y tie spacers, rail pullers and expanders. Represented by William C. Cornu, Haig C. Dilsizian, William Simpson and J. B. Templeton. Space M-12.
- Tennessee Coal, Iron & Railroad Company, Birmingham, Ala.—For exhibit see United States Steel Corporation Subsidiaries. Represented by George Bruner. Spaces Q-4 and 17 (Stage).
- Texas Company, The, New York.—Various petroleum products. Represented by W. E. Greenwood, J. L. Lavallee, J. B. Flynn, W. W. Wilson, S. E. Treadwell, R. W. Woods, J. F. Kane, J. H. Dugger, E. A. Blomgren, C. H. Weisel, M. A. Askew and W. E. Wilcox. Space M-28.
- Timken Roller Bearing Company, The, Canton, Ohio.—Several types of Timken bearings used on railway rolling stock and locomotives, with Timken light-weight forged and heat-treated main and side rods, piston, piston rod and annular groove crosshead body with crankpin and crosshead bearings; chart and samples showing materials used in 100 lb. of Timken high dynamic steel for light-weight reciprocating parts; illuminated views showing the major types of Timken bearings and special equipment for testing full-sized axles; photographs. Represented by T. V. Buckwalter, W. C. Sanders, J. Morland, M. S. Downes, P. C. Paterson, C. L. Eastburg and D. C. Hurm. Spaces H-33, 34, 35 and 37.
- Tuco Products Corporation, New York.—Tucolith light-weight composition flooring; Tuco floor finish for cars; Tuco seal waterproof fabric; Tuco seal anti-squeak and anti-corrosion fabric; Tuco standard waterproof and mildewproof roofing and cab curtain material; Tuco Royal car window screens; Tuco Zerocel insulation. Represented by David W. Pye, Harold B. Chamberlain and Richard F. O'Leary. Spaces P-18 and 20.
- T-Z Railway Equipment Company, Chicago.—"Crescent" metallic packing; blow-off valves; blow-off valve mufflers; washout and arch tube plugs; inspection plugs; tender hose couplers and strainers, tender tank valves; steam-operated cylinder cock; blower nozzles; smoke preventer nozzles; drain valves; automatic flange and rail lubricators; Brewster-White sanders; engineers' oilers and torches; "Air Push" window wipers; cab floor drain pipe receptacles; Swanson gage holders; pipe clamps; metal brake steps; retaining valve bracket. Represented by G. S. Turner, J. S. Lemley, F. J. Kearney, F. P. Platt and W. H. White. Spaces N-30 and 31.
- Ulster Iron Works, Dover, N. J.—Hand-puddled Ulster special staybolt iron; Ulster engine bolt iron; Ulster rivets; various test specimens and etched cross-sections. Represented by H. T. Bradley, J. H. Craigie, N. S. Thulin, C. F. Barton and E. W. Kavanagh. Space N-26.
- Underwood Corporation, H. B., Philadelphia, Pa.—Portable boring bar equipment; two types of crank pin turning machine; pedestal milling machine; locomotive cylinder or dome facing machine; rotary planer for valve seats; circular planer tool. Represented by W. Weidemann. Spaces LH-1 and 3.
- Union Asbestos & Rubber Company, Chicago.—Wovenstone pipe covering; Insutape; front end tape; fire pan tape; special locomotive gaskets; locomotive packing; asbestos insulations; asbestos cab curtains. Represented by L. L. Cohen, J. H. Kuhns, W. R. Gillies, G. A. Hull, A. C. Deverell, P. S. Nash, J. F. Deems, O. J. Rudolph, G. L. Green and R. M. Covert. Space Q-19 (Stage).
- Union Metal Products Company, Chicago.—Paneled sides; spring type and Union centering devices; rotary release rigging; Dreadnaught hopper car end; Dreadnaught box car end; paneled hopper car end; ball bearing buffer spring; Dreadnaught corrugated gondola door; cast and pressed hopper doors. Represented by W. P. Murphy, A. A. Frank, S. G. Rea, A. G. Bancroft, A. S. Merz, A. A. Helwig, G. G. Gilpin, J. H. Schroeder, J. E. Vaughn, J. T. Cralley and J. S. Swann. Spaces A-1 and 2.

Union Railway Equipment Company, Chicago.—Ureco multiple basket refrigeration system for refrigerator cars, outside and inside refrigerator car well traps, self-locking refrigerator door hinges, "V" type vertical wheel hand brakes, drop type power hand brakes, and draft gear carriers. Represented by T. J. Crowley, P. C. Cady, B. C. Tucker, V. G. Curry, Edward Zane and W. B. Hall. Space L-12.

Union Spring & Manufacturing Company, New Kensington, Pa.—Springs; pressed steel journal box lids; pressed steel plates; way liners. Represented by H. C. Bughman, Jr., W. F. McCabe, F. E. Shaeffer, DuRay Smith, S. P. Goodloe, D. R. Warfield, John W. Vogler, W. D. Jenkins and N. S. Kenney. Space O-4.

Unitcast Company, The, Toledo, Ohio.—Three skeleton models of hopper car underframes. Represented by Cyrus Hankins, George B. Christian, C. M. Hannaford and Earl H. Fisher. Space D-4.

United States Gypsum Company, Chicago.—Insulating wool blankets for refrigerator, passenger and tank cars; insulation boards for blind lining; expanded metal for brake shoe reinforcing, concrete reinforcing, grilles, machine and radiator guards, partitions, refrigerator car bunkers, non-skid walks and shelving; asbestos blocks, boards and pipe covering; magnesia boiler covering, locomotive lagging, pipe covering and high temperature cements. Represented by A. C. Griffith and J. C. Stewart. Space E, Lobby.

United States Metallic Packing Company, The, Philadelphia, Pa.—King metallic packing for piston rods, valve stems and air pumps; King sanders; King lubricators; King bell ringers; McLain cylinder cocks. Represented by E. Curtiss, J. W. Price, H. E. Hyslop, J. S. Mace, L. B. Miller, A. E. Munch, D. C. Thomas and J. J. Ekin, Jr. Spaces F-5 and 6.

United States Steel Corporation Subsidiaries, Pittsburgh, Pa.—A 22-ft. figure of a man, standing at the end of a railroad car, with a chopper in his hands, trimming off dead weight. Six moving dioramas, accompanied by sound effect, illustrating abrasion resistance, corrosion resistance, passenger equipment of USS Cor-Ten, passenger equipment of USS stainless steel, increased payload and lighter weight construction. Rolled steel locomotive frame and bolster also built of rolled steel. Section of right-of-way fence. General group of tubular products, including USS seamless, Durolite and copper steel pipe and tubular products. General display of USS controlled steels and USS stainless steels. Track exhibit: B. & O. 40-ton Cor-Ten box car; B. & O. 50-ton Cor-Ten hopper car; B. & L. E. 50-ton Cor-Ten hopper car; B. & L. E. 70-ton Cor-Ten hopper car; first steel hopper car ever built, constructed in 1896, stencilled B. & L. E. 5500, which has run 222,033 miles. Represented by F. D. Foote, D. J. Smith and A. F. Stuebinger. (See also subsidiaries: American Bridge Company, Pittsburgh; American Steel & Wire Company, Cleveland, Chicago; Carnegie-Illinois Steel Corporation, Pittsburgh, Chicago; Columbia Steel Company, San Francisco, Calif.; Cyclone Fence Company, Waukegan, Ill.; National Tube Company, Pittsburgh; Scully Steel Products Company, Chicago; Tennessee Coal, Iron & Railroad Company, Birmingham, Ala.; Universal Atlas Cement Company, Chicago; and United States Steel Corporation Subsidiaries.) Spaces Q-4 and 17 (Stage).

United States Steel Products Company, New York.—For exhibit see United States Steel Corporation Subsidiaries. Represented by E. J. Molineaux. Spaces Q-4 and 17 (Stage).

Universal Atlas Cement Company, Chicago.—For exhibit see United States Steel Corporation Subsidiaries. Spaces Q-4 and 17 (Stage).

Universal Draft Gear Attachment Company, Chicago.—Hand brakes; brake adjusters; pipe clamps; refrigerator door fixtures; car axle protector; spring plates. Represented by A. E. Biddle, H. I. Wrigley, C. C. Kinsman and P. B. Camp. Space L-3.

Universal Slack Adjuster Company, Camden, N. J.—Universal slack adjuster for freight cars, demonstrated on a freight car truck. Represented by Thomas James, Jr. Spaces LK-10 and 12.

Valve Pilot Corporation, New York.—Loco Valve Pilot for indicating and recording speed and cut-off on freight and passenger steam locomotives; Loco Recorder for indicating and recording speed on steam locomotives, gas-electric cars and Diesel-electric locomotives. Represented by Wm. Bell Wait, John L. Bacon, John L. Davidson, F. D. Welden, E. R. Stanford and C. F. Pennypacker. Space H-17.

Vanadium Corporation of America, New York.—Car truck frame castings of vanadium steel; manganese vanadium steel plate specimens, welded and riveted; manganese vanadium steel forgings; display of ferro alloys. Represented by George H. Weiler, H. T. Chandler, J. W. Lohnes, G. L. Norris and A. W. Demmler. Spaces N-36 and 38.

Vapor Car Heating Company, Inc., Chicago.—Vapor steam heat specialties for locomotives, including 2½-in. stop valve and reducing valve; Vapor flexible metallic conduits for rear of tender and between passenger cars, including special conduit for use with automatic couplers between articulated cars; steam heat specialties, including new regulator; wash water heating specialties; thermostatic control heating system specialties; constant pressure valve; fin-type radiation, including steel and light-weight copper and aluminum, with special supporting clamps; steam generating units; controls for air conditioning; single tube compensating thermostats; motorized valves and dampers. Represented by J. E. Buker, A. D. Bruce, L. H. Gillick, N. F. Burns, F. A. Purdy, W. H. Tucker, J. T. Clark, H. F. Lowman, L. B. Rhodes, F. Rutherford, A. F. Retta, J. H. Goodwin, E. A. Russell, John Van Vulpen, P. B. Parks and William Smith. Spaces O-30, 31, 33, 35 and 37.

Vermilion Equipment Company, Chicago.—Vermilion vertical wheel hand brake; Klasing vertical wheel hand brakes; Klasing horizontal wheel hand brakes; Klasing vertical lever hand brakes; Klasing vertical lever hand brakes for either right or left hand operation. Represented by C. O. Poor, W. T. Ashe and F. J. Stolpe. Space D-5.

Viloco Railway Equipment Company, Chicago.—Viloco sanders and sander operating valves; Whelan by-pass valves; Viloco pneumatic whistle operators; automatic rail washers; vacuum type and improved Gollmar bell ringers; bell ringer operating valves. Represented by A. G. Hollingshead, C. G. Learned, J. F. Raps, G. P. Dirth and C. W. Ploen. Spaces P-5 and 6.

Walworth Company, Inc., New York.—Walworth A.A.R. bronze valves; Walworth monel valves; Walworth lubricated plug valves; Walco pipe

wrenches; Stillson wrenches; Walseal fittings; Walseal flanges; Walseal bronze valves; Walworth A.A.R. fittings, unions and union fittings; Hi-Test, C.N.I. and Ni-Resist pipe. Represented by Henry G. Lambert, Harry Voges, J. P. Fetter, L. S. Horton, Alfred J. Eichler and Gilbert R. Thomson. Spaces P-7 and 8.

Waugh Equipment Company, New York.—Firebars; twin-cushions; draft gears. Represented by J. S. Thompson, A. J. Pizzini, H. N. Ransom, R. C. Munro, H. D. Page, R. Watson, R. G. Kelley, G. R. Munro and F. T. Roffe. Spaces O-42 and 43.

Waukesha Motor Company, Refrigeration Division, Waukesha, Wis.—Waukesha ice engine for air conditioning railway passenger cars. Track exhibit: Waukesha ice engine, Waukesha bottled gas fuel system and Waukesha evaporative sub-cooler—installed in railway passenger cars, in operation, in connection with air conditioning of car. Represented by L. W. Melcher, N. H. Willis, C. G. Callow and F. A. Fosdal. Space B-4.

West Disinfecting Company, Long Island City, N. Y.—Products for the promotion of sanitation. Represented by Everett C. Daniels, J. H. Smith and Willis Auerbach. Space G-10.

Western Railway Equipment Company, St. Louis, Mo.—Interlox floor clips; Sure Lox draft key retainer; Unitary retainer valve holder; Interlox brake shaft ratchet; Fixit coupler lock lifter adjuster; Slam refrigerator door handle hook bumper; Snap-On coupler release. Represented by Roland M. Hoerr and Sterling Campbell. Spaces P-34 and 35.

Westinghouse Air Brake Company, Wilmerding, Pa.—Operating demonstration rack of empty and load "AB" freight brake equipment; operating demonstration of high speed passenger train equipment; operating demonstration of type F-1 lubricator for air compressors; industrial motor-driven air compressor outfit; miscellaneous air brake devices. Represented by G. A. Blackmore, S. G. Down, C. A. Rowan, John B. Wright, C. C. Farmer, C. D. Stewart, J. C. McCune, C. H. Beck, C. R. Ellicott, S. L. Williams, S. L. Poorman, J. F. Craig, Robert Burgess, L. E. Carlson, C. D. Foltz, A. K. Hohmyer, E. H. Weaver, J. S. Y. Fralich, E. W. Davis, D. W. Lloyd and V. Villette. Spaces J-2, 4, 6 and 8.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.—Dyntronic balancer; all-electric speed indicator; electrostatic air cleaner; floodlights; Millite shop lighting unit; traction motors for high speed trains; Rectox rectifiers; self-protecting distribution transformers; gear motor with glass top; heavy duty water cooler; cut-away a.c. and d.c. industrial motors; metal clad switchgear for railway service; miniature car section demonstrating Micarta paneling; Micarta bearings; Micarta gears; welding equipment; model of streamline Pennsylvania locomotive; Stroboglow. Represented by G. I. Wright, T. C. Wurts, G. W. Honsberger, C. R. Black, R. P. Meily, A. H. Candee, W. D. Turnbull, L. E. Lynde, H. L. Martin, R. H. Kilner, J. J. Monroe, E. D. Lynch, R. J. Ross, F. I. Chapman, T. R. Langan, H. H. Heins, A. Sheriffs, H. P. Byrne, H. R. Meyer, L. A. Nester, W. A. Brecht, C. R. Jones, P. G. Gilbert, O. F. Bricker, R. R. Davis, P. H. Grunagel, R. S. Elberty, B. Lester and A. J. Schoch. Spaces J-5, 6, 7 and 8.

Whiting Corporation, Harvey, Ill.—Whiting electric drop pit table, Model B; photographs. Represented by R. E. Prussing, A. H. McDougall, H. K. Christie and A. W. Skinner. Spaces LD-1, 2, 3 and 4.

Willson Products, Inc., Reading, Pa.—Chipping and welding goggles; respirators; electric welding helmets and handshields; special goggles for railroad use. Represented by Donald Charlton. Space F-3.

Wilson Engineering Corporation, Chicago, Ill.—Locomotive feedwater heaters (Locomotive Water Conditioner) for storing exhaust-steam-heated water for boiler supply; Heat Boosters for preventing cold water from entering boilers from feedwater heaters; blow-off cocks; power-operated blow-off cocks; sludge removers; centrifugal blow-off mufflers; centrifugal separators for disposal of exhausts from auxiliaries; automatic thermostatic drain valves; centrifugal boiler feed pumps. Represented by J. J. Clifford, C. D. Hicks, J. M. Lammedee, C. E. Murphy and L. F. Wilson. Space M-5.

Wine Railway Appliance Company, The, Toledo, Ohio.—Anti-friction side bearings; safety steel ladders, drop door locks; drop end locks; cast hopper frames; brake balancers. Track exhibit: Hopper car. Represented by George B. Christian, C. M. Hannaford, Cyrus Hankins and Earl H. Fisher. Space C-4.

Wood Steel Company, Alan, Conshohocken, Pa.—Section of freight car made from "AW" 70-90 Super Strength steel, showing K & F type roof equipped with "AW" Super-Diamond walkways; metal brake step and passenger car steps made from "AW" Super-Diamond pattern rolled steel floor plate; passenger car platform and trapdoor equipped with "AW" Super-Diamond Pattern rolled steel floor plate; Olsen testing machine in operation demonstrating the physical properties of "AW" 70-90 Super Strength steel; approved metal brake step; photographs. Represented by A. L. Meyer, L. J. Lieberman, V. P. Wood, W. H. Dickson, H. W. Merriman, W. E. Bossert, V. H. Lawrence, L. E. Ekholm, E. F. Frey, L. R. Fisher, Fielding Ellis and R. H. Norton. Space B-2.

Worthington Pump & Machinery Corporation, Harrison, N. J.—Reception booth. Track exhibit: Locomotive feedwater heater and boiler feed pump on Union Pacific locomotive. Represented by T. Cruthers, T. C. McBride, B. R. McBath, J. F. Cosgrove, Fred B. Smith, N. W. McMahon, W. B. Savory, J. J. Alves, W. R. Leopold, C. S. Wentworth, S. L. Brownlee, W. M. Vinnedge, A. R. Dawson, W. Christiansen, J. W. Rafferty and L. H. Bishop. Space Q-16 (Stage).

Yale & Towne Manufacturing Company, The, Philadelphia Division, Philadelphia, Pa.—Yale electric industrial trucks; hand lift trucks; hoisting equipment. Represented by George C. Isbester, M. G. Peck, S. W. Gibb, J. R. Harlan and H. A. White. Spaces E-6, 7 and 8.

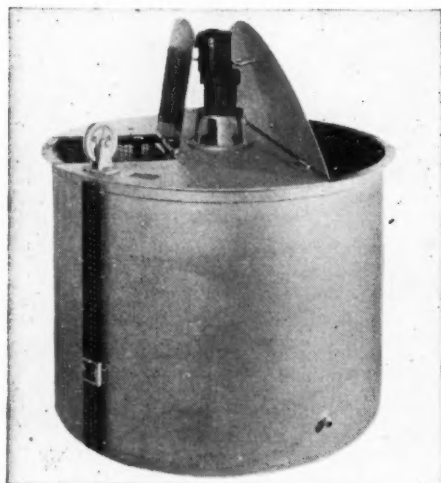
Youngstown Steel Door Company, Chicago.—Youngstown all-steel freight car sides; Youngstown corrugated all-steel freight car side doors; Camel roller lift fixtures; Camel end door fixtures. Represented by W. A. Beauchamp, J. Buckley, H. E. Creer, F. Ditchfield, A. G. Dohm, L. F. Duffy, C. E. Eklind, E. J. Fehr, F. C. Heinen, I. P. McWilliams, E. E. Robbins, A. Singer, K. J. Tobin and C. H. Williamson. Spaces F-35, 36 and 37.

New Devices . . .

Chemical Tanks for Water Treating Plants

For the mixing of water-treating chemicals into a uniform solution to be used for the wayside treatment of boiler feed water, the Dearborn Chemical Company, Chicago, is exhibiting three standard chemical tanks having net capacities of 230 gal., 580 gal. and 1,350 gal. They are all equipped with agitators, with the mechanical or hand agitating mechanism interchangeable.

The tanks are of welded construction with a $\frac{3}{16}$ -in. shell and cover plates and a $\frac{1}{4}$ -in. bottom made of tank steel. The top edge is reinforced by a rolled $2\frac{1}{2}$ -in. by $2\frac{1}{2}$ -in. angle and the bottom



Dearborn Chemical Tanks for Wayside Treatment of Boiler Feedwater

edge by the flanged edge of the tank head.

The agitating equipment consists of a set of four paddles set at an angle of 45 deg. so as to impart added motion in a different direction to the impulse obtained from revolving blades. They are long enough so as not to leave any quiet areas in the tank. A vertical splash plate running through the middle of the tank and immediately above the agitator paddles assists in the agitation by breaking up the swirl created by the paddles. These paddles are bolted to a special hub which in turn is keyed to a vertical agitator shaft. The agitator shaft is of floating type supported at the top by a combination thrust and radial roller bearing mounted between two channels at the top of the tank.

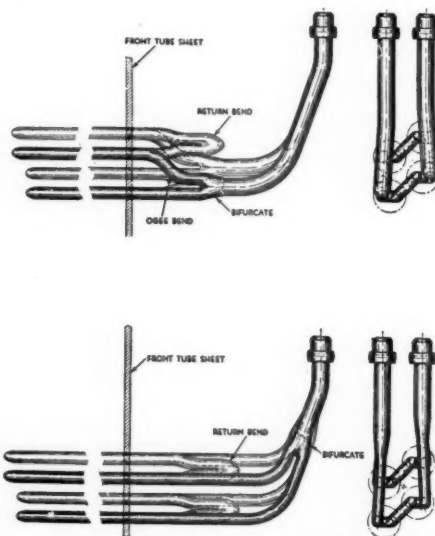
On the other hand-agitated tank the agitator shaft is driven through a set of machined bevel gears attached to their respective shafts by means of keys and set screws. On the mechanically agitated tank the agitator is driven through a flexible coupling by a straight-line vertical heliocentric gear-head mo-

tor at 10 r.p.m. Because of moisture and dust encountered around a treating plant, the motor is totally enclosed. All tanks are equipped with a swinging outlet held in suspension by a float. The end of the outlet is equipped with a stainless-steel strainer. Any of the tanks can be readily converted to a suction feeder merely by inserting an orifice in the swinging outlet ahead of the strainer.

To assist in the breaking up and shifting of chemicals when charging the tank, each tank has been equipped with a removable basket, made of perforated plate, having a capacity of 100 lb. of dry chemical. Each tank is equipped with a gage to indicate the inches of solution taken from the tank. A spud with a 1-in. pipe tap is located on the bottom for attaching a drain. The hand agitator crank, outlet, drain, chemical basket and gage are grouped in such a manner as to offer the greatest convenience in operation and the maximum number of combinations in treating-plant layouts.

Improved Type E Superheater Unit

The Superheater Company, New York, announces that the Type E Elesco superheater units have recently been improved by eliminating the ogee bends and by locating the front return bends, bifurcates and pipe bends much further ahead of the tube sheet. These changes, together with the elimination of the ogee bends, were made to reduce cinder wear on the units and shields, thereby increasing their life and reducing maintenance cost. The new arrangement of the return bends and bifurcates in the front end will also reduce



Top: The Old-Style Type E Superheater Unit
—Bottom: The New-Style Type E Unit

the obstruction to the gas, resulting in an improved draft condition. The improvements have resulted in obtaining equal resistance through the units, thereby giving equal steam distribution through each assembly.

The improved units, which are on exhibit, are interchangeable with old style units, either partially or in complete sets. On existing locomotives, when old-style units are replaced by new-style units, the brace across the smokebox for supporting the units should, if necessary, be changed to an angle brace. Old-style units sent to the Superheater Company's plant for remanufacture will be refabricated in accordance with the improved design.

Locked Sectional Cylinder-Packing Rings

A locking feature for sectional cylinder-packing rings is being exhibited by the Hunt-Spiller Manufacturing Corporation, Boston, Mass. It is designed to lock the ring in position in the groove, and is not limited to the standard Hunt-Spiller Duplex sectional packing rings



Hunt-Spiller Duplex Locked Cylinder-Packing Ring



Hunt-Spiller Duplex Locked Lip-Type Cylinder-Packing Ring

alone, but can be applied with equal advantage to a lip-type packing ring. The locking feature of this ring further permits the application of all sections of the ring to the groove without the use of any device or the conventional clamping band used in other designs of sectional packing rings. Once the rings are applied the locking feature prevents the sections from coming out of the groove.

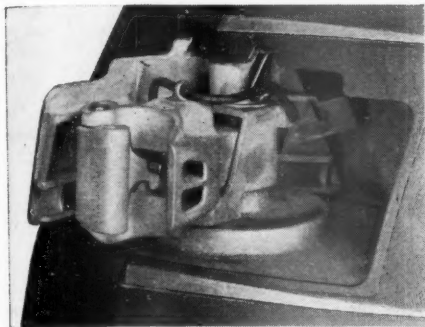
Another advantage in the locking feature is the ease with which the ring may be applied, inasmuch as it can be placed in the ring groove with the piston removed from the cylinder, and the piston with rings can be applied to the cylinder without any danger of the sections coming out. The standard offset feature on the joint of both Hunt-Spiller Duplex rings and Hunt-Spiller lip-type packing rings has the added advantage of preventing this section of the ring from coming out of the groove.

Both types of this locked sectional packing ring are supported by a Hunt-Spiller Duplex spring of alloy steel, heat-treated to withstand high cylinder

temperatures and formed to produce uniform pressures throughout the entire ring.

Retractable Coupler for Streamline Locomotives

A retractable pilot coupler for streamline locomotives has been developed by the Buckeye Steel Castings Company, Columbus, Ohio. It swings horizontally from operating to retracted position and may be

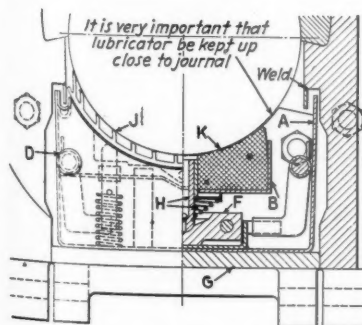


The Buckeye Retractable Pilot Coupler for Streamline Locomotives

so moved manually or by the use of an air cylinder operated from the cab. The coupler unlocking mechanism is designed so that no adjustments are necessary when the coupler is moved to the operating position. Full closure of the front face of the pilot beam and provision for the necessary coupler height adjustments are accomplished by the use of a swing-door casting which houses the short-shank pilot coupler similar to the present type of pocket casting. Ample strength and adequate buffing surfaces meet all emergencies when the retractable pilot coupler is used with a cast-steel pilot beam. These features are accomplished with the minimum number of parts and the least weight in keeping with the strength required.

Positive Lubricator for Driving-Wheel Journals

The Hennessy Lubricator Company, 75 West street, New York, is marketing a mechanical lubricator for driving-wheel



Hennessy Lubricator for Locomotive Driving-Wheel Journals

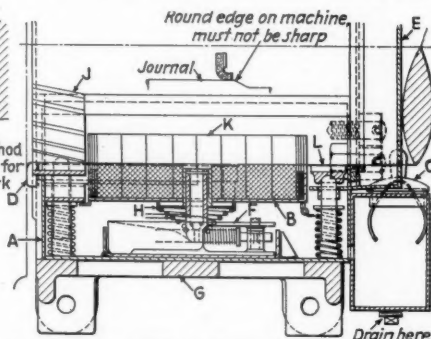
journals which uses oil as a lubricant. This lubricator is a comparatively new development and is the outcome of experiments and developments which have been carried on for the past ten years. The lateral movement of the driving wheels is used as the operating method in the same manner as used in the other journal lubricators made by this company and, aside from the changes due to the peculiar conditions surrounding the lubricating of driving journals at high speeds, the lubricator is similar to the engine-truck lubricator which has been sold by this company for the past fifteen years.

The outstanding features of this driving-journal lubricator consists of the submerged pump of sufficient capacity to furnish an oil bath to the journal at all times, with ample means for recapturing the oil to reduce the losses down to the amount of oil required to lubricate the hub faces. The pump is actuated by the lateral movement or oscillating motion imparted when the locomotive is in operation. No pumping is done when the engine is standing and the pumping action increases with speed. A specially constructed wiper is held against the journal on the hub end positioned so as to permit ample oil to reach the hub faces. A smaller wiper and extension on the end-plate prevents loss of oil on the inside of the driving box.

The distributor through which the oil is delivered to the journal is made of heat-resisting material which has been found to have extremely good wearing qualities and does not warp or become distorted when subjected to the extreme conditions of lubricating high-speed driving-wheel journals. The distributor material has sufficient absorbent qualities to afford ample lubrication to assure slow heating of the journal in event of pump failure, thereby giving notice of such heating and avoiding serious damage to journal or bearing.

These lubricators have been in use in fast passenger service for more than one year. They are claimed to give dependable oil lubrication to driving journals at a cost decidedly less than that experienced with other lubricants and to lower journal operating temperatures, thus permitting closer wedge adjustment and giving increased life of journals, bearings and hub faces.

The lubricator is of sheet-metal construction, light enough to permit easy handling by the roundhouse forces, and is applied to the conventional driving box without any change in the driving box, journal or hub faces. The parts can be easily removed for inspection and wearing parts



can be easily replaced. No pins, pipes or connections are used which can break or cause failure.

Lubricators of this type are installed on the Baltimore & Ohio 4-4-4 locomotive which is one of the track exhibits.

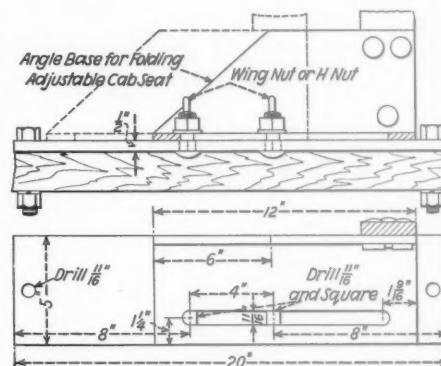
Adjustable Folding Locomotive Cab Seat

The Gustin-Bacon Manufacturing Company, Kansas City, Mo., is exhibiting a folding locomotive-cab seat with both hor-



Arrangement of Gustin-Bacon Folding Locomotive Cab Seat for Vertical Adjustment

izontal and vertical adjustment. This cab seat, shown in the illustration, was originally designed with a perpendicular ad-



Horizontal Adjustment Attachment for Gustin-Bacon Folding Locomotive Cab Seat

justing arrangement by which the seat cushion might be raised or lowered to the proper height to suit the individual engineman.

An added feature, shown in the drawing, now makes it possible also to adjust the seat horizontally to the most convenient distance from the throttle. This feature is a slotted angle base held to the cab floor by bolts with wing or H-nuts spaced on 4-in. centers in a slot. The slot in the angle base is 8 in. long, therefore, permitting a 4-in. movement of the base. The illustrated folding seat is bolted to the angle base and horizontal adjustment is made by loosening the wing-nuts, moving the seat to its desired position within the

range of the slot, and then tightening the nuts.

The vertical-adjustment feature of the seat permits five such adjustments through 5 in. in steps of 1 in. each. The minimum and maximum heights from the cab floor to the top of the cushioned seat are 18 $\frac{1}{16}$ in. and 23 $\frac{3}{16}$ in., respectively.

Low-Carbon-Steel Plates for Boilers and Fireboxes

Bethloc, a low-carbon steel for plates, firebox and flange quality, has been developed and is being exhibited by the Bethlehem Steel Company, Bethlehem, Pa. It is produced in the basic open-hearth furnace from selected materials under careful

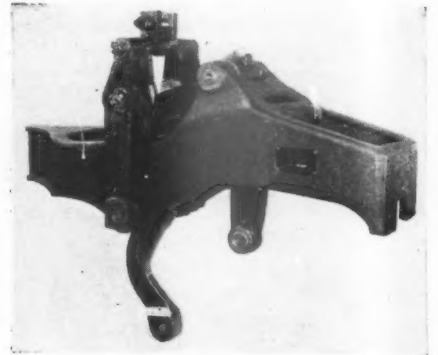
applications have been made by thirty-two railroads and locomotive builders.

Baker Valve Gear With Roller Bearings

The Pilloid Company, Swanton, Ohio, has redesigned the Baker valve gear and incorporated a number of improvements, including the use of roller bearings. The weight of the parts has been reduced and the strength increased by the use of alloy steel. The shape of the gear frame has been changed by rolling it in at the bell-crank boss, and the crossie bar relocated up near the bell-crank pin. This arrangement makes a stronger frame and helps to reduce the weight of the bell crank.

bell crank is now made from a steel forging instead of cast steel. By using this material and altering the design, the weight of this part has been reduced almost 40 per cent. The gear connecting rod has also been made shorter on the lower end and the grease cavities relocated, both of which reduce the weight. With this connecting rod the crank circle is reduced 20 per cent.

This valve gear is furnished with either plain or pin-type roller bearings. These roller bearings are self-contained units



The Shape of the Baker Valve-Gear Frame Has Been Changed by Rolling it in at the Bell-Crank Boss

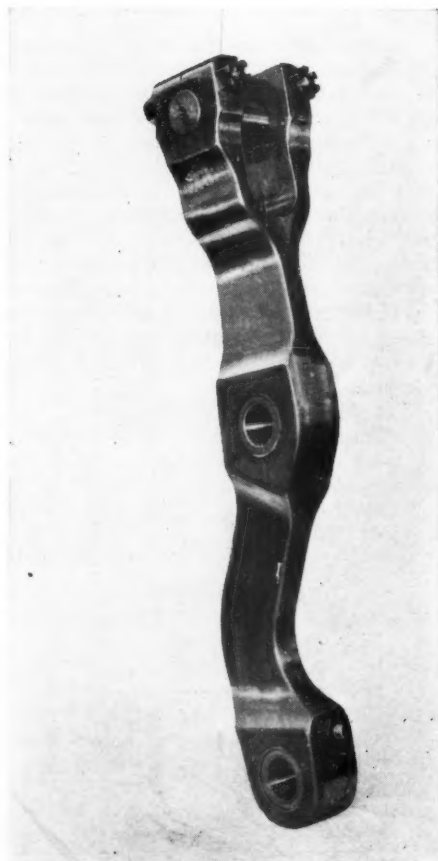
Chemical and Physical Properties of Bethloc Low-Carbon Steel					
Quality	Firebox	Flange	Quality	Firebox	Flange
Gage, in.	$\frac{3}{8}$	$1\frac{1}{2}$	Elastic limit, lb. per sq. in.	34,400	35,800
Carbon, per cent	0.080	0.120	Tensile strength, lb. per sq. in.	55,700	60,300
Manganese, per cent	0.420	0.440	Elongation, per cent	32.25	32.50
Phosphorus, per cent	0.010	0.017	Reduction in area, per cent	69.70	61.40
Sulphur, per cent	0.310	0.370			

metallurgical supervision and with slag viscosity control by the recently developed "VisControl" method. A carbon content 30 to 50 per cent lower than that of ordinary basic firebox steel is attained, with manganese, sulphur and phosphorus within proper limits and with the tensile strength well within standard specifications. A typical average of a large number of heats showing the chemical analyses and physical properties are given in the accompanying table.

Bethloc steel is bottom cast in sink-head ingot molds to eliminate pipe and to insure a sound metal free from segregations, blow holes, gas pockets and other interior defects. The ingots are first broken down in a slabbing mill and the slabs allowed to cool. After cooling they are inspected and reconditioned, if necessary, to remove surface imperfections, either by hot scarfing or cold chipping. They are then charged into heating furnaces and made ready for rolling into the finished plate. The double heating, first the ingot and then the slab, whereby the steel is allowed to cool below the critical point, serves to improve grain refinement. This procedure also permits maximum working and cross rolling of the metal which results in a better equalization of the physical properties and grain structure of the plate.

It is reported that plate made by this process has high ductility and impact strength, fine uniform grain structure, and high resistance to grain growth at the usual forming temperatures, as well as to aging and fatigue. Bethloc can be welded and can be formed hot and cold in keeping with usual practice. It was developed primarily for use in locomotive fireboxes, but can be applied equally well in locomotive and stationary boilers and for other uses where a clean, homogeneous steel is called for. Tests covering a period of almost three years and successful ap-

The designs of the radius bar and reverse yoke have been changed to eliminate the radius-bar trunnion. The upper end of the radius bar is center hung and swings on a pin mounted in the reverse yoke. The



Connecting Rod of Baker Valve Gear With Pin-Type Roller Bearings

which make them easy to assemble and protects them against foreign matter when the gear parts are taken down for inspection. With either type of bearing provision is made for taking up lateral wear with separate thrust washers. This eliminates the necessity for building up the various parts with bronze when excess lateral develops.

Simplified Feedwater Heater System

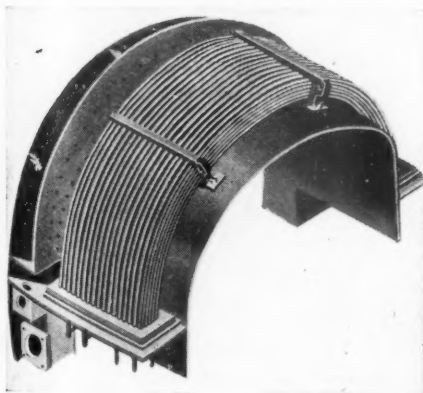
The units comprising the Coffin feedwater system exhibited by the J. S. Coffin, Jr. Company, Englewood, N. J., include a feedwater heater assembled ready for application inside the smokebox designed to preserve the smokebox contour, thus eliminating the smokebox recess formerly required by this unit. Additional features recently developed for the Coffin feedwater heater system include an auxiliary heater with a suction filter which increases de-aeration and oil separation. The auxiliary heater casting is galvanized to retard corrosion. Another improvement in the system is a re-designed feedwater pump which replaces five parts previously required; fitted with ball bearings that are self-filtered and sealed against dirt, the capacity range of the pump meets any requirements from 70 to 350 gal. per minute at 50 lb. per sq. in. delivery pressure.

A typical application of the latest Coffin feedwater heater system is shown in one of the illustrations. The parts are a centrifugal pump A; a feedwater heater B; a control valve C; an auxiliary heater D; a suction strainer E; a duplex gage F; a relief valve H; a vent check J; an air valve

O; a suction filter and an ejector Y, the latter of which is used with only a pump ahead of the trailer. The application and maintenance of the system has been simplified to attain lower costs, longer service life and greater dependability.

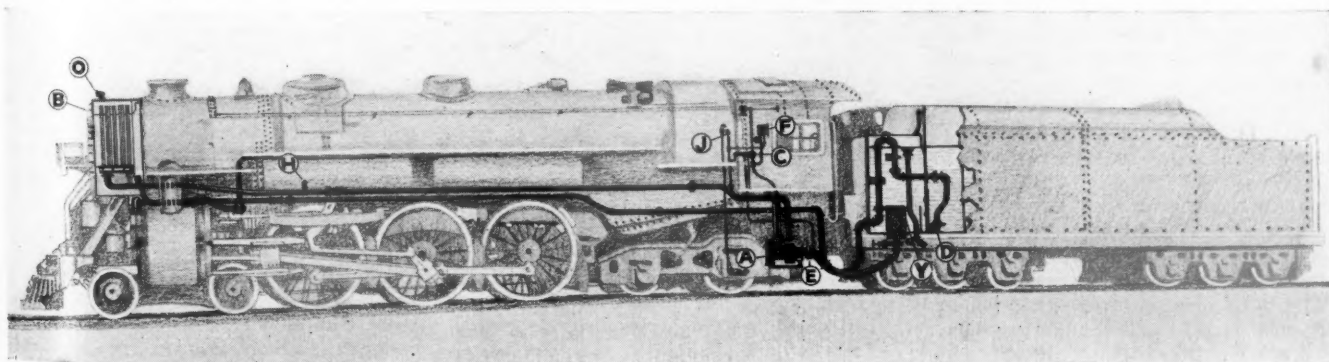
The feedwater heater inside the smokebox is of the closed type. It consists of a curved tube bundle containing five tube passages through which the water flows in a turbulent manner without the use of agitators in the tubes. Exhaust steam from the cylinders enters the steam passage at the rear of the compartment and flows, in counter direction to the water in the tubes, toward the front. The hottest water is surrounded by the hottest steam. The hot condensate flows down the curved sides of the compartment to the condensate line which carries it back to the auxiliary heater in the tender.

The auxiliary heater partially preheats the feedwater by direct contact. It utilizes the hot condensate from the closed heater to stabilize temperatures and insure maximum heat transfer. The condensate is sprayed through nozzles, in the auxiliary heater, into the feedwater as it passes from the main tender into the auxiliary heater compartment. The water in the tender remains cool. Effective de-aeration and oil separation are automatically provided for in the compartment. The preheated water in the compartment flows by gravity to the



Coffin Closed-Type Smokebox Feedwater Heater

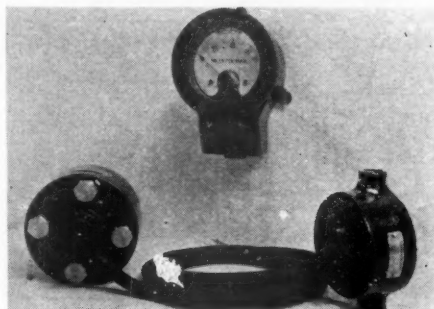
pump, passing through the suction filter and suction strainer. The pump forces the water through the discharge line and the closed heater, to the boiler. Damage to the system by excessive pressure, should the pump be started with the boiler check closed, is prevented by a relief valve.



Arrangement of the Simplified Coffin Feedwater Heater System

Electric Speedometer For Locomotives

An alternating current speedometer for steam, Diesel and electric locomotives has been developed and is being exhibited by Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. It con-



Parts of the Westinghouse Electric Speedometer for Locomotives—Cobalt Magnets rotate about the Generator Windings and Generates a Voltage and Frequency Proportional to Speed

sists of three elements: (1) An electric generator for axle mounting, (2) an indicating instrument for mounting in the locomotive cab, and (3) a junction box with a variable resistance to compensate for wheel wear. There is no mechanical drive cable and the generator is electrically connected through armored cable and wires well protected in conduit to the instrument in the cab reading in miles per hour.

On steam locomotives, the generator is mounted on the end of the axle with four heavy bolts. It is connected by a short piece of flexible cable to a rigid conduit, just back of the pilot bumper beam. The cable allows for movement between the truck and locomotive frame. There are no gears, belts, pulleys, friction drive or similarly vulnerable parts.

The generator has a stationary winding and the leads are brought out from the stationary member to a small connection box. The cable is attached to the connection box and keeps the shaft from turning while the outer part containing strong cobalt magnets rotates about the winding and generates a voltage and frequency proportional to speed. There are no brushes or commutator and the only parts subject to wear are two well protected and lubricated ball bearings. The magnets are

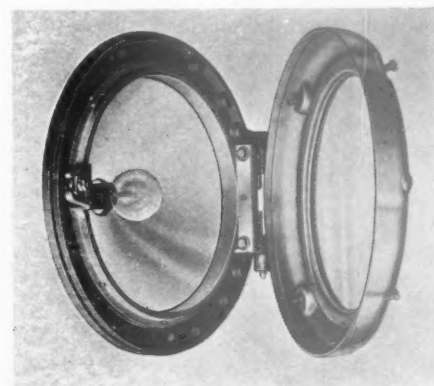
carefully aged to avoid any change of strength under service conditions.

The movement bearings in the indicating instrument have extra large jewels and pivots to withstand severe vibration. For use on steam locomotives, the entire mechanism is surrounded by 1/4-in. sponge rubber and is mounted in a heavy brass case, making the instrument steam and water-proof.

The junction box which contains the adjustable resistance to compensate for wheel wear may be mounted at any convenient point in the electrical circuit.

Headlight for Streamlined Trains

Among the exhibits of the Sunbeam Electric Manufacturing Company, Evansville, Ind., is a headlight for use with newer type streamlined locomotives. The front door of this headlight is hinged at one side and is held closed by means of four slotted cap screws which makes a water-tight joint between machined surfaces without the use of packing. This door is made of cast aluminum with all exterior surfaces polished and is used with a convex lens. The hinge arrangement permits the door to be lifted off the hinge pegs



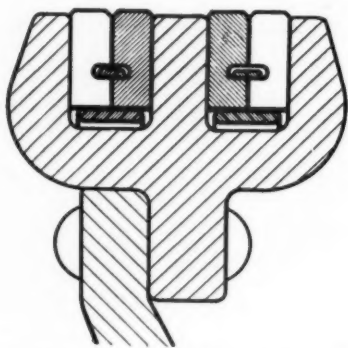
Cast-Aluminum Sunbeam Headlight for Streamlined Locomotives Requires No Door Packing

when the door is opened so that glass replacements can be made at the work bench rather than on the locomotive. The door has been made as free from projections as possible so that it will harmonize with

the streamlined appearance of the locomotive. The interior mounting carrying the glass reflector is also hinged so that it can be swung outward for ready access to the focusing device. It has a vertical and horizontal adjustment so that the light beam can be easily aligned with the track. A Sunbeam standard shock-proof lamp socket and focusing device is incorporated in this headlight.

Combined Bronze and Cast-Iron Piston Rings

Two types of locomotive cylinder packing using combination bronze and iron rings have been developed and are being exhibited by the American Hammered Piston Ring Division of the Koppers Company, Baltimore, Md. In each type of packing, individual rings of bronze and iron are made so that the overall width of the two rings will fit satisfactorily with the normal side clearance in the piston groove. The two adjacent side faces of the packing ring are grooved to receive a restrainer ring which fits comparatively loosely in this groove. This restrainer ring allows the bronze ring and the iron ring to seat independently of one another but yet, when a certain amount of wear occurs on either ring, the restraining element will prevent an undue amount of wear until the other ring comes into



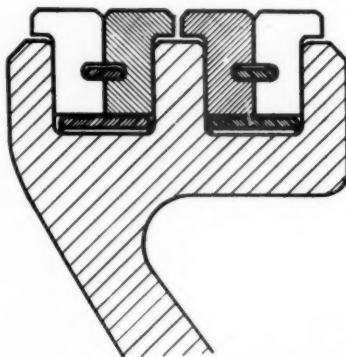
American Hammered Unflanged Type Piston Rings—The Cast-Iron Rings Are Shown in Section; the Others Are Bronze

contact with the cylinder. In almost every case it is the bronze ring which at first wears in and conditions the cylinder, after which the iron ring maintains the load and works against the cylinder that has been already smoothed over by the bronze ring.

The individual bronze and iron rings are usually cut into segments so as to facilitate installation on the piston and also to make the packing more flexible and thus more readily comfortable to the cylinder. The joints in the individual segments are staggered and maintained in this relation by the restraining ring which has an enlarged portion at one end that fits into a recess formed in the adjacent faces of the bronze and iron segments. This design was adopted to prevent blowby through the joint of the ring.

When the combination rings are made in the form of sectional packing, such as is almost universally used in the railroad field,

they are expanded by means of an auxiliary ring placed under the packing. When the flanged type of packing is used to support the weight of the piston, a corrugated or

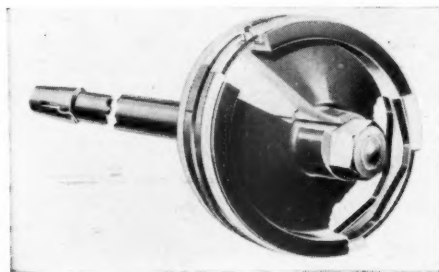


American Hammered Flanged-Type Piston Rings—The Cast-Iron Rings Are Shown in Section; the Others are Bronze

crimped chrome-vanadium steel expander ring is used which not only centralizes the piston in the cylinder and acts as a cushion for the piston, but also produces uniform wear on the packing segments.

When the unflanged type of packing is used in a bull ring which rides on the cylinder, a round or elliptical type expander is used under the packing. Since, with the bull ring type of piston, the packing does not have to support the piston, the piston naturally remains against the bottom of the cylinder and the packing necessarily projects out further on the top of the piston than at the bottom and consequently is usually made much deeper. Furthermore, on account of the great variation in piston-groove depths, the round or elliptical type of expander is the most universally adaptable.

At the present time there are three railroads in the United States using this combination bronze-iron flanged-type sectional packing, and there are seventeen more railroads testing both the flanged and unflanged types, and many of the results that have been reported have been most interesting. In one instance, it was reported that at the end of eleven months the bronze and iron unflanged sectional packing was still in service and apparently could have lasted



Piston with American Hammered Piston Rings Showing Expanders

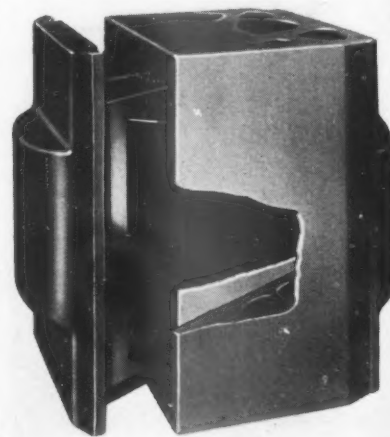
months longer, and the bull rings had not shown any undue amount of wear. The bull rings and the packing were removed, however, and a light-weight steel piston with the flanged type of packing was installed for a comparative test. The results

reported on this test showed twenty times the life of any packing previously used before testing the bronze and iron combination.

In another instance, with the use of the flanged-type bronze-iron packing it was found that, in three weeks, the wear on the packing was approximately $\frac{1}{16}$ in., with a small amount of wear also apparent in the cylinder; however, at the end of six months there was no further wear either on the packing rings or on the cylinder. In this instance, evidently the packing had reconditioned the cylinder and, after smoothing up the cylinder and wearing away part of the packing, a condition of equilibrium was reached where no further wear took place.

National Draft Gear Rubber Cushioned

The National Malleable and Steel Castings Company, Cleveland, Ohio, has developed and is exhibiting a draft gear for passenger locomotive and car service which



National Type M-350 Draft Gear Incorporates Rubber Cushions Bonded to Steel Plates

uses rubber bonded to steel plates and stressed by a combination of shear and compression loading. Rubber arranged to carry the load in shear represents one of the most efficient shock cushioning means ever produced. By combining this shear loading with the proper amount of direct compression loading, the characteristics best adapted for the soft quiet cushioning of shocks in passenger equipment can be obtained.

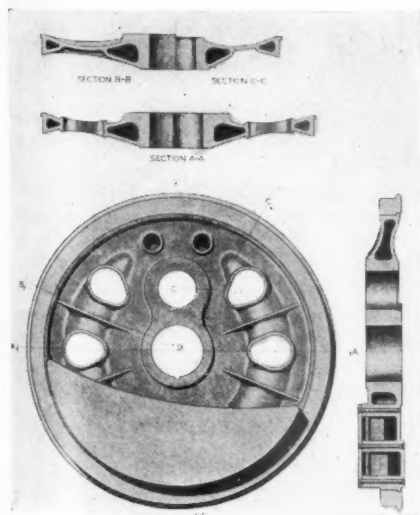
In the National type M-350 draft gear, two rubber cushions are bonded to steel plates. These two units are mounted at an angle of 65 deg. to each other between two steel castings which form the ends of followers of the gear. The outer ends of these castings may be rounded to engage concave surfaces in the yoke so as to allow vertical rocking of the yoke about the gear when used with tight-lock couplers. Flat shoulders on either side of the follower castings engage the front and rear draft lugs of the gear pocket. When the gear is compressed by buffing or pull-

ing forces, the follower castings approach one another and compress each rubber unit in a diagonal direction, producing a combination of shear and compression stresses in the rubber. These gears, in combination with tight-lock couplers, are in service on some of the Electro-Motive Diesel-powered locomotives in high-speed passenger service.

Disc Centers For Driving Wheels

During the past year The Baldwin Locomotive Works, Eddystone, Pa., and its subsidiary, The Standard Steel Works Company, have developed an improved type of driving-wheel center which has definite advantages over the conventional spoke-center generally used on locomotives. The Baldwin disc wheel center is similar in some respects to the rolled and cast-steel center used on steel-tired truck wheels. It gets its strength from triangular sections of metal at the hubs and rim of the wheel. With this construction it is possible to reduce the diameter of the axle and wrist-pin hubs, hence lightening the upper part of the wheel and affording more space in the lower half for the lead in the counterbalance. The illustrations show the construction of the wheel-centers.

These wheel centers have been subjected to rigorous tests and in all cases have shown results either equal to or, as in most cases, better than the conventional spoke center. The pressures used in mounting and dismounting typical wheels of both types on their axles are practically identical.



The Baldwin Disc Wheel Center with Sectional Views Showing the Construction

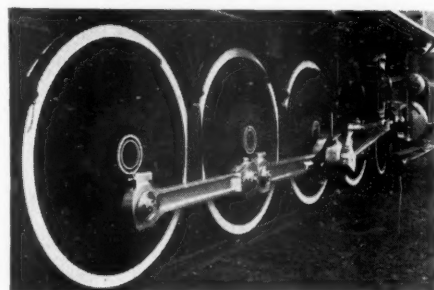
tical. The mounting and dismounting pressures for the crank-pins are well within the range of good practice, the pins being applied with a final pressure of 175 tons. The removal pressures started at 215 tons and tapered off gradually to 40 tons at about 1-in. from the end.

The chemical properties of the wheel centers are as follows: Carbon, 0.35 per cent; silicon, 0.36 per cent; phosphorous,

0.026 per cent; manganese, 1.40 per cent; and sulphur, 0.031 per cent. The physical properties are: Tensile strength, 92,000 lb. per sq. in.; yield point, 57,000 lb. per sq. in.; elongation, 24.5 per cent, and reduction in area, 52 per cent.

The primary aims in the development of the new wheel centers were: (1) To provide for improved counterbalance in wheels of small diameter; (2) to eliminate the trouble experienced from shrinkage cracks in the spokes; (3) to provide for equal pressure of the rim on the tire, made possible by the sturdy rim section backed up by the dished section between the rim and the hubs.

Comparing the dynamic augment of the disc wheel with that for the old wheels, the superiority of the disc wheel is at



Baldwin Disc Driving-Wheels Applied to a Locomotive

once apparent. At 50 m. p. h. the dynamic augment of the disc wheel is only 6,650 lb. This is so far below the static weight that there is no tendency to lift the wheels from the rails.

One set of the new wheels was first applied to Central of Georgia locomotive No. 771 for observation and study. They have now been in operation for about seven months and the results have been eminently satisfactory; the riding qualities of the locomotive have been improved and rail trouble has been eliminated. The success of this application led the railroad to purchase six additional pairs of Baldwin disc main wheels for application to existing locomotives. Other applications of disc wheels include the main wheels, 61-in. in diameter, on five Union Railroad locomotives, and the main wheels, 64 in. in diameter, on ten Bessemer & Lake Erie locomotives recently built. They will also be applied to the 57-in. main wheels of one Alton & Southern locomotive now on order and to an existing 2-10-2 type on the Seaboard Air Line. On the five 4-8-4 type locomotives now on order for the Richmond, Fredericksburg & Potomac all the driving wheels will be Baldwin disc type.

Improved Top Heads For Air Compressors

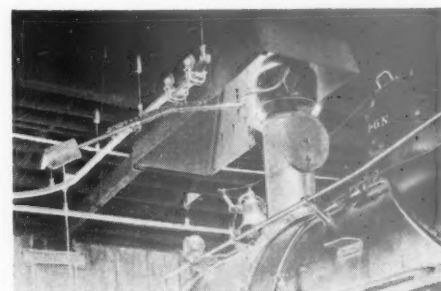
Among the exhibits of the Westinghouse Air Brake Company, Wilmerding, Pa., is an 8½-in. cross-compound air compressor having a top head embodying the following advantageous new features: The line steam pipe may be connected to the

top head instead of to the steam-cylinder body; this eliminates a source of gasket trouble. The reversing valve is of the piston type instead of the slide-valve type; this improved design minimizes frictional resistance, which reduced strain on the reversing rod, assures more positive action, and consequently gives better compressor performance. The main valve is of the unit type, instead of segmental; this assures maintenance of alignment, simplifies assembly, and facilitates repairs.

Coppus Locoblow Units Improved

The Coppus Locomotive Equipment Company, Worcester, Mass., is exhibiting a locoblow which is now made in two types, designated as types CE and DE, respectively. The operating unit, including motor, bearing housings and fan is the same in both types, but the casing of type CE is made of sheet aluminum while that of type DE is made of cast aluminum. Type CE unit is furnished with either an inverted or diverted adapter, while the type DE unit is furnished only with an inverted adapter. Both types are furnished with either a single-speed 3,600-r.p.m. motor or two-speed 1,800/3,600-r.p.m. motors.

The motor leads in earlier types were exposed; now they pass through a tube into a conduit-trunnion at the end of one of the prongs of the supporting fork (for single-speed motors) or at the end of both prongs (for two-speed motors) in which they connect to leads extending through the fork to another conduit. Here connection



Locoblow with Monorail in Front of the Smoke Jacks for Multiple-Stall Installations

is made to a flexible cable fastened overhead and long enough to allow the locoblow to be moved around, or provided with a plug to be inserted into a socket, depending upon the kind of application. The locoblows can be arranged in trolleys for either single-stall or double-stall installation, and for multiple-stall installation.

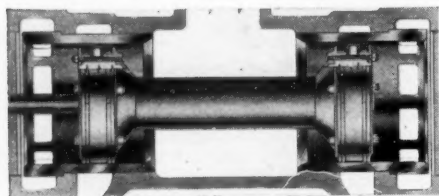
An advantage of the single-stall or double-stall installation is its automatic starting and stopping feature; that is, the motor starts and stops when the trolley passes a limit switch, thus putting the locoblow in operation all the time it is in the vicinity of the locomotive stack. Therefore the motor is air cooled when it is in operation and there is no danger of burnouts. If the locoblow is used for more

than two stalls the automatic starting-and-stopping feature cannot be used.

Because of the absence of automatic control in multiple-stall installations, the locoblow is not recommended for more than two stalls. Two kinds of systems are possible, applying multiple-stall installations: (1) The monorail with switch and spur track to each stall, and (2) the plain monorail in front of the smoke jacks. With (1) the standard supporting fork is used since the locoblow is applied to the locomotive stack in the same manner as with the single- or double-stall installation, that is, from a rail running alongside the jack. With (2) a long special supporting fork is used, the length being determined by the distance from the monorail to the center of the jack and the maximum spotting distance back of the center of the jack. The advantage of using the standard fork with system (in common with the single- or double-stall installation) over the other system is the ability to serve an engine regardless of the length of the jack and the position of the engine under the jack because the rail from which the engine is served is located alongside the jack. Another advantage of system (1) over system (2) is its flexibility. It is obvious that with system (2) one locoblow cannot pass another. In such a case it is necessary to bring the locoblow to be applied up to the one already in use, move the latter ahead and apply the former. This method, however, is preferred by some to the expense of installing monorail switches and the trouble of operating them.

Light-Weight Locomotive Valves

Hunt-Spiller Manufacturing Corporation, Boston, Mass., is exhibiting a light-weight locomotive valve which is intended to better valve performance and lower maintenance costs. Especially designed to reduce weight on this reciprocating part and main-



The Hunt-Spiller Light-Weight Valve Equipped with Duplex Sectional Valve-Packing Ring

tain power with proper steam distribution, its light-weight features make the valve act promptly and positively in reversing and changing cut-offs. They also reduce the shock on the valve gear, thereby reducing wear throughout the entire valve motion.

The valve in combination with the Hunt-Spiller Duplex sectional valve-packing rings further reduces wear and friction on the valve bushing, thus prolonging the life of the bushing and increasing economy of operation.

Chemical Pump for Water-Treating Plant

There has been a definite need in the water treating field for accurate, sturdy, and efficient feeding equipment capable of handling concentrated chemical solutions at widely varying rates of feed. The Engineering Department of the Dearborn Chemical Company has produced a compact pump based on the displacement prin-



The Dearborn Type R Chemical Pump

ciple but which has unique features of design, adjustment and operation. This pump is being exhibited by the Dearborn Chemical Company, Chicago.

An outstanding innovation is the stroke adjustment built into the crankshaft, which gives a stroke adjustment over a range of 3 in. without in any way affecting the smoothness of operation or the wear of moving parts. This feature, in combination with interchangeable pump cylinders, gives a solution to the problem. It is constructed of corrosion resistant metals to give trouble-free service under all conditions. All parts have been accurately machined, insuring interchangeability of parts together with smooth operation and long life.

The pump consists of a base, crankshaft, wrist pin, crosshead and guides, common to all sizes of pump cylinders. The pump mechanism is designed for 1/2 hp. at 43 r.p.m., permitting the 3-in. diameter cylinders to work at pressures up to 90 lb. per sq. in., with the smaller sizes at considerably higher pressures. The pump cylinders are available in four sizes: 1 in., 1 1/2 in., 2 in. and 3 in. in diameter. All are interchangeable on the base of the actuating mechanism.

The crankshaft has an adjustable wrist pin built into the crankshaft, providing for an adjustment of 0 to 3 in. in the stroke of pump. The adjustment is made by means of a screw with Acme threads. The crankshaft is mounted on two self-sealed ball bearings enclosed by a housing which is an integral part of the base for the pump actuating mechanism. As the wrist pin is subject to an intermittent load, with the maximum load occurring during the discharge stroke and the minimum load during the suction stroke, a floating bushing of Oilite bronze is used in the small cross-

head is built into the large crosshead so as to convert the rotating motion of the crankshaft to a vertical motion of the pump cylinder. The crosshead of the large crosshead not only provides access to the small crosshead but offers a means of taking up wear when and if it occurs. The large crosshead with an integral yoke for attachment of the pump piston is placed directly above and in perfect alignment with the center of the pump cylinder, providing evenly distributed wear on crosshead shoes and crosshead guides. This feature will also assure maintenance of piston alignment in the stuffing box.

The crosshead shoes and guides are furnished lubricant by means of Alemite fittings with spring-feed reservoirs.

The pump cylinders are of self-priming design with relieved cylinder walls. The pump cylinder is tapped in four places, offering flexibility in locating the suction and discharge lines. The relieved cylinder walls permit locating the discharge check at the top of the piston stroke so that any air contained in the solution will be expelled with each stroke. The stuffing box is exceptionally deep, containing a liberal amount of chevron type packing and a lantern ring. Lubricant is furnished to the lantern ring by means of an Alemite fitting.

Each pump is equipped with two iron check valves with renewable seats and discs of stainless steel. The valve discs have wings set at an angle; this gives the disc a tendency to rotate, insuring perfect seating and a uniform distribution of wear on seat and disc.

The pump cylinders and pistons are made of material highly resistant to caustic solutions. All sizes of cylinders are made of cast Niresist Iron, the 1-in. and 1 1/2-in. diameter pistons are of Monel Metal, and the 2-in. and 3-in. diameter pistons are of Niresist Iron. The crankshaft is drop forged of S.A.E. X-1020 steel. All other castings are of nickel semi-steel with a 1.00 to 1.50 nickel content.

The pump can be furnished with sprocket for chain drive, or pulley for belt drive, or any other means that the particular installation may call for. The motor-driven unit is mounted on a cast base with the pump driven by a 1/2-hp. splashproof motor through a highly efficient Helio-centric gear reducer with a 1/2 hp. output at 43 r.p.m.

Lubricator for Air Compressors

The United States Metallic Packing Company, Philadelphia, Pa., has recently developed and is exhibiting a mechanical lubricator known as the Model 36 King lubricator for oiling locomotive air compressors. In the lubricator, the pulsating air pressure from the air cylinder of a compressor operates a variable-speed hydraulic motor which rotates the cam shaft, and in turn operates the pumps that deliver oil to the steam and air cylinders of the compressor. This method of operation

eliminates the use of ratchets and pawls, and also gives a wide range of adjustment of the quantity of oil delivered.

The lubricator has two oil reservoirs and three pump units. Valve oil may be delivered to the steam cylinders and air-compressor oil to the air cylinders, or if desired valve oil may be used in both reservoirs. The upper reservoir has a



The King Air-Compressor Lubricator

capacity of one pint, and the lower one three pints. The lubricator is entirely automatic in operation, starting when the compressor starts, and stopping when the compressor stops.

Spur-Gear Chain Hoist With Gravity Lowering

The illustrated spur-gear chain hoist, designated as the Power Master, is a recent development being exhibited by the Coffing Hoist Company, Danville, Ill. The features of the hoist include gravity lowering, lowering speed controlled by a clutch and governors, a free chain for quick adjustment of the load, and controlled stopping features to stop the load

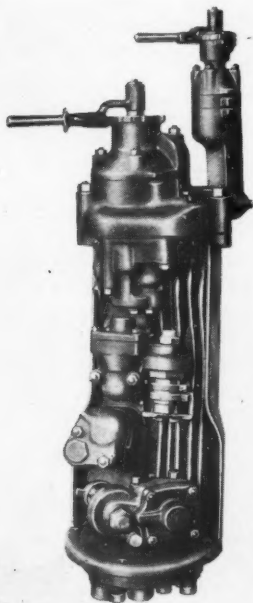


The Coffing "Power Master" Chain Hoist with Convertible Capacities from 1½ to 6 Tons

in a fractional part of an inch. The hoist is convertible in capacities of from 1½ to 6 tons, the intermediate capacities being 3 and 4½ tons. The 1½-, 3-, 4- and 6-ton hoists weigh 98, 110, 123.5 and 141 lb., respectively. The shafts of the hoist are fitted with ball bearings, and it has a sealed planetary gear system which runs in oil. The hoist is equipped with a diamond chain designed to stand 400 per cent overload; all models are tested at 100 per cent overload. The hoist is the result of four years of experimenting and has been tested under actual service conditions for more than a year.

Pedestal Brake Valve For 8-ET Locomotive Brake

The Westinghouse Air Brake Company, Wilmerding, Pa., is exhibiting one of its latest types of pedestal brake valves. In



All Cab Devices for No. 8-ET Brake Equipment Are Mounted on a Single Pedestal

this design all cab air-brake devices are mounted on a pedestal to the base of which all heavy pipes are connected by reinforced flanged unions. The cab presents a neater appearance, owing to the elimination of a maze of piping; the engineman's quarters are less restricted; the brake devices are brought within easy reach for inspection, adjustment, and removal; air leakage is minimized as there are fewer threaded pipe joints subject to vibratory strains.

Maintenance is further simplified as out-of-order valves are replaceable without breaking any pipe connections. Considerable saving is effected when locomotives are overhauled, since it is only necessary to make and break pipe connections to the bottom of the pedestal instead of all the connections and fittings to the brake valves within the cab.

This brake valve is for use with the No. 8-ET equipment.

Self-Propelled Tractor Crane

The Silent Hoist Winch & Crane Co., Brooklyn, N. Y., is exhibiting a self-propelled power-swinging live-boom industrial tractor crane powered with an inter-



The 5,000-lb. Capacity Model A Crane Kar Powered with a Gasoline Motor

nal-combustion engine. The units, designated as Crane Kars can be equipped with either gasoline or Diesel engines and are available in two standard sizes for railroad and industrial applications: one, the Model A Crane Kar, has a lifting and transporting capacity of 5,000 lb. at 5-ft. radius to the front and to either side and 3½ ft. clear of the front bumper, while the other, the Model AX Crane Kar, has a lifting and transporting capacity of 10,000 lb. at 5-ft. radius to the front and to either side and at 3½ ft. clear of the front bumper.

The following additional features have been incorporated in both models. An auxiliary winch head with a disconnect clutch is available which permits the operator to do auxiliary pulling and snaking when it is necessary in restricted locations to snake the load into position for the crane to lift and transport it; a reverse-gear directional transmission has been developed for both models, providing four selective geared speeds for traveling in forward and reverse.

Both Crane Kars are regularly furnished with the following accessories: Electric lighting and starting equipment consisting of two headlights, one tail light, generator, battery, starter, electric horn and ignition lock switch; a two-man seat; wheel fenders; four lashing hooks; a front bumper; a tool box with a complement of tools, an air cleaner, an oil filter, and a governor.

The cranes are so designed that the operator has full vision under every condition and use of the crane. Other features include automatic stabilized capacity which permits the tractor to lift the maximum rated load at the front and to swing it to either side with full stability; raising and lowering the boom with power with the maximum load suspended on the hook; ability to transport any load it can lift and negotiate grades up to 15 per cent; simplified accessible controls with two-speed gearing for all motions of the crane of hoisting, and swinging and topping by power forward and reverse with automatic braking.

Rolled-Steel Locomotive Frames

A recent development by the Carnegie-Illinois Steel Corporation, Pittsburgh, Pa., is the rolled-steel locomotive frame flame cut by the manufacturer to suitable form to permit the locomotive builder to plane

Results of Tensile Tests of Specimens from Flame-Cut Rolled-Steel Locomotive Frames

Test*	Yield point, lb. per sq. in.	Tensile strength, lb. per sq. in.	Elongation, %	Reduction of area, %
B	44,530	79,580	37.0	57.4
AT	41,830	79,580	33.0	58.6
AB	43,930	79,880	29.0	53.4
BT	44,030	82,280	30.0	54.7
BB	44,530	83,230	31.0	54.7
CT	44,030	82,080	31.0	56.1
CB	42,280	83,080	30.5	56.1
DT	43,330	79,880	29.0	53.4
DB	44,480	81,480	30.0	54.7
T	43,480	80,980	29.0	53.3

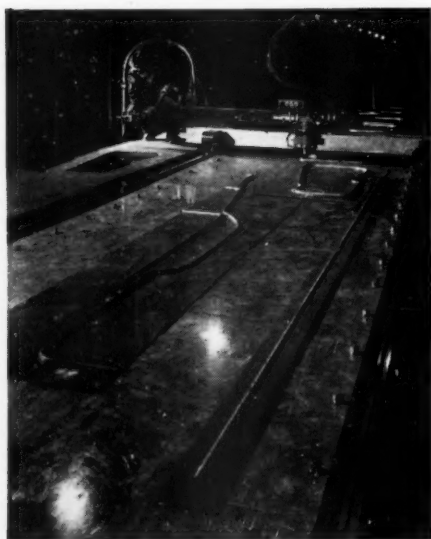
* Drawing shows location on frame from which test specimens were taken.

and slot the frame readily to the finished dimensions required. The steel for these frames is converted from ingots into slabs by two separate rollings. Seams and small surface imperfections are removed between the rolling operations, and a sufficiently



Location of Frame from Which Test Specimens Were Taken

large discard is taken from each ingot to secure freedom from piping and undue segregation. The frame section is shaped by gas cutting, which is performed while



Gas Cutting Rolled-Steel Locomotive Frame with Pantograph Machine

the slab is held by burners between 400 and 500 deg. F. After the gas cutting, the temperature of the frame is maintained until it is placed in the normalizing furnace. An average practice for the double

normalizing and heat-treating operation is as follows: First, it is heated to 1,570 deg. F. for four hours and air cooled; second, it is heated to 1,475 deg. F. for four hours and air cooled; and third, it is subjected



Gas Cutting the Rolled Slab at Approximately 400 to 500 Deg. F.—Note the Clean-Cut Surfaces

to a drawing temperature of 1,145 deg. F. for four hours.

Among the desirable characteristics of these frames are homogeneous structure

throughout and uniform physical properties. With the latest gas-cutting machinery and the double-normalizing treatment and draw back, the flame has no injurious effect on the structure of the steel. There are no data to show that a clean smooth gas cut is detrimental to the parent metal when a medium-carbon steel, subjected to proper heat-treatment after gas cutting, is used. Etch tests have proved that a fine granular structure exists adjacent to the flame-cut edge.

In the manufacture of the wrought and rolled-steel locomotive frames, it is the present practice to leave $\frac{3}{8}$ in. of material for machine finishing on all pedestal openings and fitted surfaces. Other flame-cut surfaces can be finish machined if required by the railroad, although tests have shown that this additional work is unnecessary.

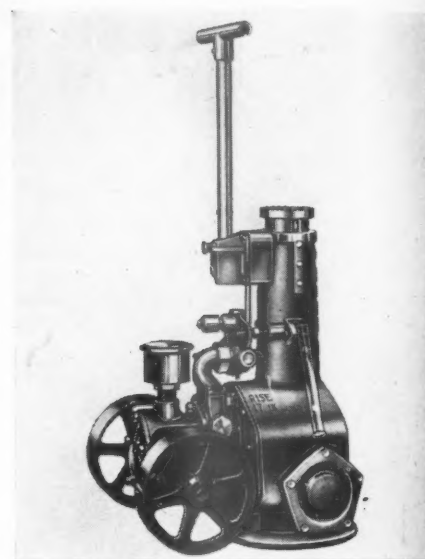
On a frame recently manufactured, the results given in the table were obtained in tensile tests. The illustration shows the location on the frame from which the test specimens were obtained.

In addition to finding a place in new equipment, the wrought-steel locomotive frame can be used for general repair programs. When extensive repairs to a locomotive are found necessary, the wrought slab frame will place the locomotive on a substantial foundation. Such an installation will be far more economical than excessive welding on cracked frames. If only the front section is required, usually to the first pedestal opening, a small section of the wrought slab frame is available

without excessive pattern cost and can be welded at this opening to the existing cast-steel frame. In addition to steam locomotives, the rolled-steel frame can be used advantageously in lighter power, such as electric and mine locomotives, and internal-combustion engines.

Power Jacks Equipped With Rotary-Type Motor

A power jack equipped with a rotary-type motor, for use in car and locomotive repairing is being exhibited by the Duff-Norton Manufacturing Company, Pitts-



Duff-Norton Power Jack Equipped With Rotary-Type Air Motor

burgh, Pa. Manufacturers' tests indicate that the jack operates at high speed on the average air pressure maintained in railway shops, and that the load can be raised 25 to 50 per cent faster than with former types of power jacks. The same tests show that the rotary-type motor consumes no more air per unit of work than ordinarily required despite its increased lifting speed. The rotary motor makes it possible to regulate these jacks in pairs by means of an adjusting screw, thus assuring one-man control of heavy loads.

These jacks are built in capacities of 50, 75 and 100 tons with raises of 14, 17, 25 and 30 in., and are equipped with extra large, wide-treaded wheels and a folding handle, built integrally with the jack, making for easy portability over rough floor surfaces or soft wet ground.

Construction features include ball-bearing thrust and radial mountings throughout, an automatic shut-off which cuts the motor off when the lifting standard reaches the safe limit of its lift or depth, and an up-and-down throttle control assuring fingertip control under all conditions.

In addition to this power jack equipped with a rotary motor, Duff-Norton will also continue to manufacture jacks operated by piston-type air motors.